

**2010 Annual Status Report  
for the Boomsnub/Airco Superfund Site  
Hazel Dell, Washington**

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## CONTENTS

	<u>Page</u>
EXECUTIVE SUMMARY .....	ES-1
1. INTRODUCTION .....	1
1.1 Background.....	1
1.2 Purpose.....	3
1.3 Operating Objectives .....	3
1.4 Organization of this Document.....	4
2. OU-2 SYSTEM OPERATIONS .....	7
2.1 IWS System Operations.....	7
2.2 IWS System Monitoring and Termination.....	7
2.2.1 <i>IWS System Rebound Testing</i> .....	7
2.2.2 <i>IWS System Monitoring</i> .....	8
3. OU-3 SYSTEM OPERATIONS .....	11
3.1 System Operations .....	11
3.1.1 <i>Groundwater Extraction System</i> .....	11
3.1.2 <i>Groundwater Treatment System</i> .....	11
3.1.2.1 <i>Ion Exchange and Air Stripper Systems</i> .....	11
3.1.2.2 <i>Linde Infiltration Gallery</i> .....	11
3.2 System Performance .....	12
3.2.1 <i>Water Treated</i> .....	12
3.2.2 <i>System Availability</i> .....	12
3.2.3 <i>Mass Removal</i> .....	12

	<u>Page</u>
3.3 Plume Monitoring .....	12
3.3.1 <i>Semiannual Site-wide Groundwater Monitoring</i> .....	12
3.3.2 <i>Water Level Gauging Program</i> .....	13
3.4 Infiltration Gallery Monitoring.....	13
3.5 Systems Under Review .....	14
4. GROUNDWATER MONITORING AND TRENDS .....	17
4.1 Well Groupings.....	17
4.2 Groundwater Trends .....	18
4.2.1 <i>Overview</i> .....	18
4.2.2 <i>Alluvial Aquifer</i> .....	18
4.2.2.1 <i>Upgradient Wells</i> .....	18
4.2.2.2 <i>TCE Source Wells</i> .....	19
4.2.2.3 <i>Proximal Wells</i> .....	19
4.2.2.4 <i>Intermediate Wells</i> .....	20
4.2.2.5 <i>Church of God Wells</i> .....	21
4.2.2.6 <i>Toe-of-Plume Wells</i> .....	22
4.2.3 <i>Troutdale Aquifer Wells</i> .....	22
4.2.4 <i>TCE as a VOC Indicator</i> .....	23
5. OTHER ACTIVITIES .....	25
5.1 Access Agreements and Easements .....	25
5.2 HydraSleeve™ Evaluation .....	25
5.3 Sustainability Practices .....	25
6. ANNUAL SCREENING OF GROUNDWATER MONITORING DATA .....	27
6.1 Redundancy .....	28
6.2 System Operations .....	28
6.3 Termination.....	29
6.4 Sampling Frequency .....	30
6.5 Attainment .....	31
6.6 Annual Well Screening Conclusions and Recommendations.....	33
7. CONCLUSIONS, RECOMMENDATIONS, AND PLANNED ACTIVITIES .....	35

	<u>Page</u>
7.1 Conclusions.....	35
7.2 Recommendations and Planned Activities for 2011 .....	36
8. REFERENCES .....	39

#### APPENDIX A: CHROMIUM CONCENTRATIONS IN GROUNDWATER

Chromium Concentrations – Summary Tables .....	A-1
Chromium Concentrations – By Well Grouping.....	A-2
Chromium Concentrations – Individual Wells.....	A-3

#### APPENDIX B: TRICHLOROETHENE CONCENTRATIONS IN GROUNDWATER

TCE Concentrations – Summary Tables .....	B-1
TCE Concentrations – By Well Grouping.....	B-2
TCE Concentrations – Individual Wells.....	B-3

#### APPENDIX C: WELL EVALUATION TABLES AND ADDITIONAL MAROS OUTPUTS

Well Evaluation Tables .....	C-1
------------------------------	-----

C-1 2010 MAROS RESULTS SUMMARY	
C-2 SUMMARY OF WELLS REQUIRING NO FURTHER SAMPLING FOR	
TCE AND/OR CHROMIUM	
C-3 WELL SAMPLING FREQUENCY CHANGES FOR 2011	

Chromium Outputs .....	C-2
TCE Outputs.....	C-3

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## LIST OF FIGURES

<u>Number</u>	<u>Title</u>
1	Site Location Map
2	Site Overview Map
3	Monitoring and Extraction Well Network
4	OU-2 Treatment and Monitoring Wells
5	Cumulative Removal Over Time
6	Influent and Effluent Concentrations Over Time
7	Influent Concentrations Over Time
8	Alluvial Aquifer Groundwater Contours, Fall 2010
9	Troutdale Aquifer Groundwater Contours, Fall 2010
10	Extraction and Monitoring Well Groupings
11	Wells with Chromium Concentrations Above the Cleanup Level in 2010
12	Wells with TCE Concentrations Above the Cleanup Level in 2010
13	Chromium Plume Map, 1995 vs. 2010
14	TCE Plume Map, 1995 vs. 2010

## **LIST OF TABLES**

<u>Number</u>	<u>Title</u>
1	OU-2 TCE Source Well Sampling Results
2	2010 Extraction Well Pumping Rates
3	Wells and Recommended Sampling Frequencies
4	Summary of Well Sampling Frequencies
5	Attainment Wells

**LIST OF ACRONYMS AND ABBREVIATIONS**

AFCEE	Air Force Center for Environmental Excellence
Boomsnub	Boomsnub Corporation
CAS	Columbia Analytical Services
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
City	City of Vancouver
COV	Coefficient of variation
1,1-DCE	1,1-dichloroethene
EA	EA Engineering, Science, and Technology, Inc.
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ft	Feet
GAC	Granular activated carbon
IWS	In-Well Stripping
LTMP	Long-Term Monitoring Plan
Linde	Linde, LLC (formally known as BOC Gases)
MAROS	Monitoring and Remediation Optimization System
MDL	Method Detection Limit
Mg/L	milligrams per liter
MRL	Method Reporting Limit
N/C	Not conducted
O&M	Operation and Maintenance
OU	Operable Unit
PDBS	Passive diffusion bag samplers
QASP	Quality Assurance and Sampling Plan
ROD	Record of Decision

SCADA Supervisory Control and Data Acquisition  
Site Boomsnub/Airco Superfund Site  
SVE Soil Vapor Extraction

TCE Trichloroethene  
TOC Total Organic Carbon  
TOPPS Toe-of-Plume Pilot Study

$\mu\text{g/L}$  Micrograms per liter  
URS URS Group, Inc.

VOC Volatile organic compound

## **EXECUTIVE SUMMARY**

## Introduction

This Annual Status Report summarizes information on activities that took place during 2010 at the Boomsnub/Airco Superfund Site (Site) in Hazel Dell, Washington. EA Engineering, Science, and Technology, Inc. (EA), under contract to Linde LLC (Linde; formerly known as BOC Gases), is currently operating and maintaining a Site-wide groundwater extraction and treatment system and a volatile organic compound (VOC) source removal system.

Work at the Site is currently conducted under a Consent Decree (CD) between the U.S. Environmental Protection Agency (EPA) and Linde (Docket No. CO7-5163FDB) which was entered by the court on 29 June 2007.



## SITE LOCATION MAP

## Site Background and Operating Objectives

In 1987, the Washington State Department of Ecology (Ecology) determined that a plume of chromium-contaminated groundwater was emanating from the Boomsnub Corporation (Boomsnub) manufacturing facility. In 1991, during cleanup activities at the Boomsnub facility, a second plume containing VOCs was detected and determined to be coming from the Linde property, located east of the Boomsnub facility.

Linde owns and operates an industrial gas production facility adjacent to the Boomsnub property. The Linde plant manufactures compressed and liquefied gas products including nitrogen, oxygen, and argon. The plant also stores and distributes other specialty gases such as hydrogen and helium. The facility was built by Air Liquide America Corporation in 1963 and has been in operation since 1964.

The Site is divided into three operable units (OUs) to manage cleanup activities: OU-1 (Boomsnub Soil); OU-2 (Linde Soil); and OU-3 (Site-wide Groundwater). The operating objectives of the OU-2 source removal systems include the following:

- Remove VOCs from the vadose zone that may be acting as the source to groundwater.
- Remove VOCs from groundwater on the western portion of the Linde property.
- Halt the off-property migration of VOCs in groundwater.

The operating objectives of the OU-3 groundwater extraction and treatment system include the following:

- Reduce further contaminant migration within the alluvial aquifer.
- Continue mass removal activities.
- Reduce contaminant migration into the Troutdale aquifer.

### ***OU-2 VOC Source Removal Systems***

Since the identification of the VOC plume in 1991, Linde has undertaken a number of steps to identify the extent of the VOC plume, mitigate the plume, and control plume migration. The primary VOC of concern is trichloroethene (TCE), which serves as an indicator of VOC presence at the Site.

In September 2003, Linde began construction of the Non-Time Critical Removal Action at the Linde facility to address the VOC source area (OU-2). The selected remedial action was a combination of in-well stripping (IWS) and soil vapor extraction (SVE) systems to remove VOCs from both the soil and groundwater. The systems became operational in February 2004. The SVE system was operated to treat the vadose zone soil in OU-2 until 2008, when it was turned off with EPA approval.

### ***OU-3 Site-wide Groundwater Extraction System***

The purpose of the OU-3 groundwater extraction and treatment system is to remove hexavalent chromium and VOCs that have been released to groundwater through historical industrial operations at the Boomsnub facility (chromium) and the adjacent Linde production facility (VOCs). There are two distinct contaminant release points, one for TCE and one for chromium. The contaminant plumes overlap and become commingled downgradient of the source areas.

The highest concentrations of site contaminants occur in a shallow groundwater-bearing zone referred to as the alluvial aquifer. The alluvial aquifer is not used as a municipal water supply, although a limited number of private wells pump from this aquifer. TCE and chromium have been detected, although at considerably lower concentrations, in the deeper groundwater-bearing zone, the Troutdale aquifer. The Troutdale aquifer serves as a municipal water supply for the City of Vancouver and Clark County. Municipal water supply wells are not located in areas known to contain elevated concentrations of contaminants detected at the Site.

The groundwater extraction and treatment system has been operational since 1990 and was constructed along the axis of the chromium plume. Since 1990, the system has been modified, upgraded, and expanded several times to handle the VOCs and chromium, to increase pumping and treatment capacity, and to increase removal efficiency. On the basis of monitoring data collected since 1995, the constituents of concern have not migrated past the monitoring well network.

Chromium is removed from the extracted groundwater using an ion-exchange system. VOCs are removed from the extracted groundwater using air stripping with granular activated carbon (GAC) treatment of the off-gases. The treatment facility is located on the Boomsnub property. Treated groundwater is discharged to an infiltration gallery located on the Linde property.

### **2010 OU-2 Systems Operations**

The IWS system is operating within the performance standards established for the Site. Groundwater sampling and analyses were conducted to monitor the OU-2 systems in accordance with the EPA-approved Site Operations and Maintenance (O&M) Manual.

Based on measured groundwater concentrations, the IWS System has removed more than 96% of the mass of TCE in groundwater since startup. Due to the low TCE concentrations in groundwater, the system is not reducing the concentration of TCE as quickly as in previous years.

EA is currently pulse-pumping the IWS system (alternating operating wells) to change groundwater circulation patterns and potentially increase TCE removal rates. Alternating the IWS wells causes the circulation patterns in the groundwater to change potentially impacting areas of higher TCE concentrations.

## 2010 OU-3 System Operations

During 2010, the groundwater extraction and treatment system operated within the performance standards established for the Site. During the reporting period, the ion-exchange system had an average chromium removal rate of over 97 percent and the air stripper system averaged a TCE removal rate of approximately 96 percent.

Treated groundwater from the Site treatment system is discharged back into the alluvial aquifer through the infiltration gallery located on the Linde property. All of the treatment system effluent was discharged to the infiltration gallery during the reporting period. The groundwater treatment system continues to meet the discharge criteria for required constituents.

On the basis of measured influent and effluent concentrations and the total monthly groundwater flow, approximately 41 pounds of chromium and 14 pounds of TCE were removed by the groundwater extraction and treatment system during 2010. This brings the cumulative total mass of chromium and TCE removed to approximately 22,231 and 2,164 pounds, respectively, since initiating operations in 1990. The mass of contaminants removed during the reporting period continued to decline compared to the previous reporting period. This is consistent with a continuing downward trend over the past few years and is reflected in the average influent concentrations of chromium and TCE at the Site.

Semiannual site-wide groundwater monitoring was conducted in Spring 2010 and Fall 2010. Contaminant concentrations continue on an overall decreasing trend in Site wells.

The Toe-of-Plume Pilot Study (TOPPS), an *in-situ* treatment program, was performed in 2006 to treat an area of recalcitrant contamination. Chromium and TCE concentrations in the TOPPS monitoring wells have remained below the cleanup level since that time indicating that the TOPPS treatment was effective.

During 2007 and early 2008, TCE concentrations increased significantly in well AMW-18, located near the northern boundary of the Site plume. In May 2008, an investigation was performed to evaluate the depth and concentration of TCE in groundwater in the vicinity of well AMW-18. Based on the data obtained, it has been concluded that the source is not the same as for the OU-3 plume. This offsite plume is referred to as the Northern Plume. In Fall 2010, the TCE concentration in groundwater from well AMW-17 increased to above the cleanup level, indicating the apparent arrival of the Northern Plume at this well.

The following figures compare chromium and TCE concentrations in groundwater at the Site in 1995 and 2010. These figures show that the groundwater extraction and treatment system has been effective in mass removal and decreasing the footprint of the plumes over time.

Chromium Concentrations ( $\mu\text{g/L}$ )Trichloroethene Concentrations ( $\mu\text{g/L}$ )

## Annual Screening of Groundwater Monitoring Data

The third annual screening of groundwater monitoring data for the Site was conducted in accordance with the revised Closure Plan. The annual screening evaluates data collected at the Site since 1995 (the year the Site was placed on the National Priorities List) for each alluvial aquifer monitoring and extraction well sampled. The data are used to determine what changes, if any, should be made to system operations and the well sampling schedule, and to determine if cleanup levels have been attained in groundwater.

A combination of quantitative and qualitative evaluations of the Site data was used to derive the recommendations for the annual screening. The Air Force Center for Environmental Excellence (AFCEE) Monitoring and Remediation Optimization system (MAROS) version 2.2 was used for the quantitative evaluation. MAROS is a computer program developed to optimize long-term groundwater monitoring, determine when to terminate groundwater treatment, and demonstrate cleanup level attainment using statistics. Using statistical analyses, MAROS is capable of making recommendations on sampling frequencies and is able to determine if groundwater concentrations are statistically below cleanup levels. The qualitative evaluation consisted of professional judgment based on Site experience. The following factors were considered when proposing a revised sampling frequency for a well: the MAROS recommended sampling frequency, the use of the well at the Site, the results from the MAROS evaluation of whether or not contaminants in groundwater are statistically below cleanup levels, and the need for data from a well for decision making. The quantitative and qualitative evaluations do not always reach the same conclusions. When this occurs, professional judgment takes priority.

Attainment monitoring is performed on a limited number of wells to assess whether post-treatment concentrations remain statistically below cleanup levels. Attainment monitoring is conducted on selected wells that represent different areas of the plume.

Based on the results of the 2010 annual screening of the groundwater monitoring data, the following conclusions are made:

- No modifications to system operations are necessary at this time.
- TCE and/or chromium concentrations in groundwater from several wells were found to be statistically below the cleanup level.
- A number of changes to sampling frequencies are recommended based on the results of the MAROS evaluation and on the qualitative review.

## Planned 2010 Activities and Summary Status

In order to meet the operating objectives for OU-2 and OU-3, planned activities for 2010 were recommended in the 2009 Annual Status report. The status of these planned activities is as follows:

- **Rebound testing/system modifications proposed for Church of God sports fields –** Well MW-27D is in an area of the Church of God property proposed for development. Well MW-25D is located downgradient of well MW-27D. The pump in extraction well MW-27D was turned off in November 2009 and the sampling frequency for wells MW-27D and MW-25D was increased to quarterly to monitor for potential contaminant rebound. Rebound testing was performed to determine if the extraction system piping to well MW-27D can be disconnected when the property is developed. Following one year of quarterly monitoring, no evidence of contaminant rebound was observed in either well. Chromium and TCE concentrations remained well below the cleanup level in both wells. The planned development of the Church of God property has been delayed and may not take place for several years. However, based on the monitoring results, the extraction system piping to well MW-27D can be removed.
- **TOPPS Sampling –** Sampling of TOPPS wells was reduced as recommended. Groundwater monitoring results for 2010 show continued effectiveness of the treatment.
- **Continue to work on obtaining easements and access agreements –** Negotiations continued with numerous property owners to obtain easements and access agreements. During 2010 EA was successful in obtaining two new recorded agreements with property owners.
- **Replace the pump in well MW-33 prior to the sampling event in Fall 2010 –** Repairs were made to MW-33 well by installing a new flush mount well monument and refurbishing the dedicated pump. The well was also redeveloped by surging, brushing and pumping.
- **Sample monitoring wells in accordance with the updated sampling schedule –** Monitoring wells were sampled in accordance with the sampling schedule presented in the 2009 Annual Report and in the response to EPA comments on that report.

## **Recommendations and Planned Activities for 2011**

The following activities are planned for the 2011 reporting period:

- **System modifications on Church of God property –** No rebound in chromium or TCE concentrations was observed in groundwater from wells MW-25D or MW-27D after turning off the pump in well MW-27D. Chromium and TCE concentrations remain well below the cleanup level in both wells. Therefore, it is recommended that the pump in well MW-27D remain off and that the sampling frequency for the two wells be decreased. Well MW-25D will be sampled semiannually in accordance with the LTMP schedule for active extraction wells, and well MW-27D will be sampled annually in accordance with the LTMP schedule for inactive extraction wells.

Chromium and TCE concentrations in groundwater from several additional extraction wells in the current toe-of-plume area (on Church of God property) are below the Site

cleanup levels. An evaluation will be performed to determine if additional changes to pumping rates or discontinuation of pumping additional wells is appropriate in this area. The Site groundwater model will be used to evaluate the impact of proposed extraction system pumping rate changes on groundwater flow and contaminant capture.

- **Discontinue TOPPS Sampling** – Chromium and TCE concentrations have remained below the cleanup level for four years in the TOPPS wells (AMW-63 and MW-41), indicating that the TOPPS treatment has been effective. Therefore, it is recommended that sampling cease for TOPPS monitoring. Sampling will continue for well MW-41 on an annual basis as an attainment well.

During the Fall 2010 sampling event a grab sample of the purge water from wells MW-41 and AMW-63 was collected and analyzed for total organic carbon (TOC) to evaluate the need for continued separation of this water. A treatment system influent sample was collected for comparison. Based on the results, segregation and special handling of the TOPPS purge water no longer appears to be necessary. The TOC concentration in the TOPPS well purge water sample (1.05 milligrams per Liter [mg/L]) was lower than that in the influent water sample (1.60 mg/L), indicating that TOC concentrations in the TOPPS area have returned to normal levels. Therefore, it is recommended that the TOPPS purge water be handled in the same manner as other purge water at the Site.

- **Toe of Plume hotspots** – The use of an *in-situ* treatment, similar to that used in the successful TOPPS program, will be evaluated for reducing contamination in the MW-35 and AMW-27 areas.
- **Continue to work on obtaining easements and access agreements.**
- **Well modifications on the Clark County property** – Decommissioning of two unused monitoring wells on the Clark County sports field property is planned before the start of construction of the sports fields, anticipated to begin in Spring 2011. Monitoring wells remaining on the property will be modified as needed, to accommodate changes in the land elevation. Additional unused Site monitoring wells may be decommissioned at the same time, with EPA approval.
- **Continue to cooperate with EPA on investigation of the Northern Plume.**
- **Sample wells in accordance with the updated sampling schedule.**

## 1. INTRODUCTION

This Annual Status Report summarizes information on activities that took place during 2010 at the Boomsnub/Airco Superfund Site (Site) in Hazel Dell, Washington. EA Engineering, Science, and Technology, Inc. (EA), under contract to Linde LLC (Linde; formerly known as BOC Gases), is currently operating and maintaining a Site-wide groundwater extraction and treatment system and a volatile organic compound (VOC) source removal system. Work at the Site is currently conducted under a Consent Decree (CD) between the U.S. Environmental Protection Agency (EPA) and Linde (Docket No. CO7-5163FDB) which was entered by the court on 29 June 2007 (EPA 2007a).

### 1.1 Background

The Site is located in Hazel Dell, Washington, just north of the city limits of Vancouver, Washington. It includes two adjacent facilities, the former Boomsnub Corporation (Boomsnub) chrome plating facility and the Linde industrial gas production facility. The Linde plant manufactures compressed and liquefied gas products including nitrogen, oxygen, and argon. The plant also stores and distributes other specialty gases such as hydrogen and helium. The facility was built by Air Liquide America Corporation in 1963 and has been in operation since 1964.

The Site is divided into three operable units (OUs) to manage cleanup activities: OU-1 (Boomsnub Soil); OU-2 (Linde Soil); and OU-3 (Site-wide Groundwater). A Site location map is presented as Figure 1 and a Site overview map as Figure 2.

In 1987, the Washington State Department of Ecology (Ecology) determined that a plume of chromium-contaminated groundwater was emanating from the Boomsnub facility. While cleanup activities were being conducted at the Boomsnub facility, VOCs were detected in groundwater samples and were suspected to be coming from the Linde property. Linde began investigating the nature and extent of VOCs in 1991. In June 1994, EPA took over the role of lead regulatory agency from Ecology and in April 1995 the Site was placed on the National Priorities List. There are two distinct contaminant release points, one for VOCs and one for chromium. The primary VOC of concern is trichloroethene (TCE), which serves as an indicator of VOC presence at the Site. The groundwater contaminant plumes overlap and are commingled down gradient of the source areas. The plumes were found to extend approximately 4,400 feet (ft) in a west-northwest direction from the sources.

Linde has conducted numerous site investigations, performed groundwater treatment, and conducted a removal action on their property at OU-2. Additionally, EPA conducted soil removal actions at OU-1 in 1994 and 2001 to remove the majority of the hexavalent chromium-contaminated soils serving as a source for groundwater contamination.

The highest concentrations of site contaminants have occurred in a shallow groundwater-bearing zone referred to as the alluvial aquifer. The alluvial aquifer is not used as a municipal water supply, although a limited number of private wells pump from this aquifer. TCE and chromium have been detected, although at considerably lower concentrations, in the deeper groundwater-

bearing zone, the Troutdale aquifer. The Troutdale aquifer serves as a municipal water supply for the City of Vancouver (City) and Clark County. Municipal water supply wells are not located in areas known to contain elevated concentrations of chemicals detected at the Site.

A groundwater extraction and treatment system is used to capture and treat Site groundwater. The groundwater extraction and treatment system has been operational since 1990 and was constructed along the axis of the chromium plume. Since 1990, the system has been modified, upgraded, and expanded several times to handle the VOCs and chromium, to increase pumping and treatment capacity, and to increase removal efficiency. On the basis of monitoring data collected since 1995, the constituents of concern have not migrated past the monitoring well network. The monitoring and extraction well network for the Site is presented on Figure 3.

Chromium is removed from the extracted groundwater using an ion-exchange system. VOCs are removed from the extracted groundwater using air stripping with granular activated carbon (GAC) treatment of the off-gases. The treatment facility is located on the Boomsnub property. Treated groundwater is discharged to an infiltration gallery located on the Linde property. The infiltration gallery was constructed during September and October 2005 and began receiving water in February 2006 (EA 2006). Prior to the construction of the infiltration gallery, the treated groundwater was discharged to the City sanitary sewer system.

The Record of Decision (ROD; EPA 2000) for OU-1 and OU-3, dated February 2000, identified the remedy for the Site as continued groundwater extraction and treatment until groundwater cleanup levels are achieved throughout the groundwater plume. The remediation goals include the reduction of total chromium in groundwater to 80 micrograms per liter ( $\mu\text{g}/\text{L}$ ) and the reduction of TCE to 5  $\mu\text{g}/\text{L}$ .

An Action Memorandum, dated September 2001 (EPA 2001), was issued by EPA identifying the requirements for remediation activities for OU-2. On 18 September 2002, Linde and EPA entered into an Administrative Order on Consent, EPA Docket Number ([Comprehensive Environmental Response, Compensation and Liability Act] CERCLA10-2002-0052; EPA 2002), addressing the specific design, construction, and operational requirements for a Non-Time-Critical Removal Action for OU-2 to implement the requirements of the Action Memorandum.

On 1 April 2002, Linde assumed interim responsibility for the operation and maintenance (O&M) of the groundwater extraction and treatment system.

In October 2002, URS Group, Inc. (URS), working under contract to EPA and in cooperation with representatives from the EPA Environmental Services Assistance Team, conducted additional soil characterization activities on Boomsnub property around the groundwater extraction and treatment system building. The purpose of the work was to identify areas in the shallow soils (15 ft or less deep) with concentrations of chromium above the cleanup levels specified in the ROD. The results of the soil characterization activities were presented in the *Soil Characterization: Groundwater Treatment System Compound* report, finalized in April 2003 (URS 2003).

In September 2003, Linde began construction of the Non-Time Critical Removal Action at the Linde facility to address the VOC source area (OU-2). The selected remedial action was a combination of in-well stripping (IWS) and soil vapor extraction (SVE) systems to remove VOCs from both the soil and groundwater. The systems became operational in February 2004. The SVE system was operated until 2008 to treat the vadose zone soil in OU-2, when it was turned off with EPA approval.

The Toe-of-Plume Pilot Study (TOPPS), an *in-situ* treatment program, was performed in 2006 to treat an area of recalcitrant contamination. Chromium and TCE concentrations in the TOPPS monitoring wells have remained below the cleanup level since that time indicating that the TOPPS treatment was effective.

In 2008, an investigation identified a new plume north of the Boomsnub/Airco Plume, in the area around well AMW-18 (EA 2008). This plume is referred to as the Northern Plume. The source of this plume is unknown, but it is not the result of activities on the Boomsnub or Linde properties. The EPA is leading the effort to characterize and remediate this plume.

## **1.2 Purpose**

The purpose of this report is to provide an overview of the activities for OU-2 and OU-3 at the Site. The reporting period is 1 January through 31 December 2010.

## **1.3 Operating Objectives**

The operating objectives for OU-2, identified in the 2001 Action Memorandum (EPA 2001), include the following:

- Remove VOCs from the vadose zone that may be acting as the source to groundwater.
- Remove VOCs from groundwater on the western portion of the Linde property.
- Halt off-property migration of VOCs in groundwater.

The operating objectives for OU-3, as defined in the ROD (EPA 2000), include the following:

- Reduce contaminant migration within the alluvial aquifer (expansion of the plumes).
- Continue mass removal activities.
- Reduce contaminant migration into the Troutdale aquifer.

The overall operating objectives for the OU-3 system are to limit the potential for impacted groundwater to migrate beyond current limits and to maximize mass removal while meeting operational objectives of the treatment system. Activities at the Site are designed to meet these overall objectives.

## 1.4 Organization of this Document

This report is divided into 8 sections and 3 appendices:

- Section 1 provides the background, purpose, and operating objectives.
- Sections 2 and 3 present summaries of the system operations for OU-2 and OU-3, respectively.
- Section 4 discusses groundwater monitoring and trends.
- Section 5 summarizes additional site activities conducted during the reporting period.
- Section 6 discusses the annual screening of groundwater monitoring data to determine what changes, if any, should be made to current system operations and/or the well sampling schedule.
- Section 7 summarizes conclusions and presents recommendations and planned activities for 2011.
- Section 8 lists the references cited in this document.

Information on chromium and TCE concentrations in groundwater is presented in Appendices A and B, respectively. The information is presented both by well groupings and by individual wells. Only wells sampled during the reporting period are included. The appendices are organized in sections, as follows:

- Tables reporting chromium and TCE groundwater concentrations for the last four semiannual sampling events are provided in Appendices A-1 and B-1, respectively. The historical maximum concentration detected in each well sampled is also provided.
- Graphs showing chromium and TCE concentration trends by well grouping are presented in Appendices A-2 and B-2, respectively. These graphs allow a comparison of trends within geographical or hydrogeological groupings. They also allow immediate comparison of concentrations between wells in a grouping and the ability to identify potential outliers.
- Graphs showing chromium and TCE concentrations over time for individual wells are presented in Appendices A-3 and B-3, respectively. Additional information obtained as part of the annual screening of groundwater monitoring data is included with each graph for alluvial aquifer wells. Data provided in the graphs have been consolidated and are presented as the geometric mean for each year.

- Tables and outputs created during the annual evaluation of groundwater monitoring data are included in Appendix C. Appendix C-1 contains the well evaluation tables; C-2 contains additional chromium Monitoring and Remediation Optimization System (MAROS) outputs; and C-3 contains additional TCE MAROS outputs.

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## 2. OU-2 SYSTEM OPERATIONS

This section provides a summary of the OU-2 IWS system operations and monitoring conducted between 1 January and 31 December 2010. Groundwater sampling and analyses was conducted to monitor the OU-2 systems in accordance with the procedures in EA's EPA-approved *Operations and Maintenance Manual, Combined In-Well Stripping and Soil Vapor Extraction System* (EA 2004a). Locations of the OU-2 treatment and monitoring wells are shown on Figure 4.

### 2.1 System Operations

The IWS system is operating within the performance standards established for the Site. System operations were manually checked by the Site operator weekly to confirm that the IWS system was operating within the design parameters. In addition, the operator remotely verified IWS operations periodically using the Supervisory Control and Data Acquisition (SCADA) system. The SCADA system is programmed to notify the operator of system malfunctions. Information specific to the system is presented in the Progress Reports (EA 2010c and EA 2010f) which are submitted on a semiannual basis.

Since startup, the system has been running 24 hours per day, with the exception of downtime to perform routine maintenance activities. The system was in operation over 97 percent of the reporting period, exceeding the 90 percent availability specified in the CD. Minimal periods of down time were due to maintenance, power outages, and system alarms. Modifications and/or repairs that were made to the system during the reporting period are presented the Progress Reports (EA 2010c and EA 2010f).

### 2.2 IWS System Monitoring and Termination

#### 2.2.1 IWS System Rebound Testing

Based on measured groundwater concentrations, the IWS System has removed more than 96% of the mass of TCE in groundwater since startup. Due to the low TCE concentrations in groundwater, the system is not reducing the concentration of TCE as quickly as in previous years.

EA is currently pulse-pumping the IWS system (alternating operating wells) to change groundwater circulation patterns and potentially increase TCE removal rates. Alternating the IWS wells causes the circulation patterns in the groundwater to change, potentially impacting areas of higher TCE concentrations. Changes to the IWS operations are made after each groundwater sampling event. IWS wells operating during the 2010 reporting period are presented on the following table:

**IWS Wells and Months of Operation**

	<b>Jan.</b>	<b>Feb.</b>	<b>March</b>	<b>April</b>	<b>May</b>	<b>June</b>	<b>July</b>	<b>Aug.</b>	<b>Sept.</b>	<b>Oct.</b>	<b>Nov.</b>	<b>Dec.</b>
<b>IWS-3</b>										■	■	■
<b>IWS-4</b>						■	■	■	■	■	■	■
<b>IWS-5</b>	■	■	■	■	■							
<b>IWS-6</b>	■	■	■	■	■	■	■	■	■	■	■	■
<b>IWS-8</b>						■	■	■	■	■	■	■

Termination of the IWS system, as described in the revised Closure Plan (EA 2009), continues and wells IWS-1, IWS-2, IWS-7 and IWS-9 are no longer in use. Well IWS-8 is being used again to provide more flexibility in rebound testing and in adjusting/modifying circulation patterns. Rebound testing is being conducted to see if TCE concentrations increase/rebound in the areas where IWS wells have been shutdown. Rebound testing will continue through 2011 and TCE concentrations will be observed.

### **2.2.2 IWS System Monitoring**

To monitor the IWS System performance, groundwater samples were collected from OU-2 monitoring wells in April and October 2010. The samples were submitted to Columbia Analytical Services (CAS) of Kelso, Washington and analyzed for VOCs using EPA Method 8260B.

Table 1 presents the TCE data from OU-2 wells sampled during the 2010 reporting period and includes data from 2009 for comparison purposes. During 2010, groundwater samples from four wells had TCE concentrations above the cleanup level of 5 µg/L during both Spring and Fall sampling events: AMW-2A, AMW-12A, AMW-53A, and MW-1A. TCE concentrations were the highest in groundwater from well AMW-2A at 91 µg/L during the Spring sampling event. TCE concentrations in groundwater from wells AMW-2A, AMW-12A and MW-1A have remained above the cleanup level since quarterly sampling began in May 2004. TCE concentrations in well AMW-53A continue to fluctuate above and below the cleanup level but remained above during 2010.

The concentration of TCE in groundwater was measured from wells operating within the radius of influence of IWS wells IWS-3, IWS-4, IWS-5, IWS-6 and IWS-8. The following table presents these IWS wells and associated monitoring wells within the radius of influence, as defined in the Closure Plan (EA 2009). This information is also shown on Figure 4. Some of the compliance monitoring wells specified within the Closure Plan are no longer monitored because TCE concentrations have consistently been below the cleanup level.

IWS Well	Associated Compliance Monitoring Wells Within Radius of Influence
IWS-3	AMW-56A, <b>AMW-56C</b>
IWS-4	<b>AMW-12A</b> , AMW-56A, <b>AMW-56C</b>
IWS-5	AMW-19A, <b>AMW-19B</b>
IWS-6	AMW-1A, AMW-1B, <b>AMW-1C</b> , <b>AMW-2A</b> , AMW-2B, <del>RAMW 2C</del>
IWS-8	AMW-1A, AMW-1B, <b>AMW-1C</b>

Note: **Bolded** wells had TCE concentrations above the cleanup level of 5 µg/L in 2010.  
**Deleted Wells** are no longer monitored since they are not impacted by the contaminants of concern

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### **3. OU-3 SYSTEM OPERATIONS**

This section provides a summary of OU-3 system operations, system performance, and plume monitoring conducted from 1 January to 31 December 2010. Groundwater sampling and analyses were conducted in accordance with the procedures in the EPA-approved Site Quality Assurance Sampling Plan (QASP; EA 2004b).

#### **3.1 System Operations**

Routine system operation details are presented in the Progress Reports (EA 2010c and EA 2010f) submitted to EPA twice a year.

##### ***3.1.1 Groundwater Extraction System***

The groundwater extraction and treatment system operated within the performance standards established for the Site. The extraction well pumping rates were recorded once a month during the reporting period. The recorded pumping rates are shown in Table 2.

##### ***3.1.2 Groundwater Treatment System***

Routine monitoring of the treatment system influent and effluent was conducted throughout the year. Monitoring included monthly sampling and analysis of TCE, chromium, and pH. Treatment system components are briefly described in the following sections.

###### ***3.1.2.1 Ion Exchange and Air Stripper Systems***

During the reporting period, the ion-exchange system had an average chromium removal rate of over 97 percent and the air stripper system averaged a TCE removal rate of approximately 96 percent.

###### ***3.1.2.2 Linde Infiltration Gallery***

Treated groundwater from the Site treatment system is discharged back into the alluvial aquifer through the infiltration gallery. The gallery is located in the southeast corner of the Linde property and is designed to accept treated water at 160 gallons per minute. No modifications or significant repairs were made to the infiltration gallery during the reporting period.

Effluent discharged to the infiltration gallery during 2010 met the maximum allowable effluent concentrations of 1.9 µg /L for TCE and 19.2 µg /L for chromium.

## 3.2 System Performance

### 3.2.1 Water Treated

During the reporting period, 82,027,043 gallons of groundwater were treated and all treated water was discharged to the Linde infiltration gallery.

### 3.2.2 System Availability

The treatment system was operational for 8,721 hours, or approximately 99 percent of the reporting period, exceeding the 90 percent requirement of the CD. The availability ranged from 97 percent in September to 100 percent in February, May, July and November. The percent availability includes actual minutes of operation and scheduled down time.

### 3.2.3 Mass Removal

On the basis of measured influent and effluent concentrations and the total monthly groundwater flow, approximately 41 pounds of chromium and 14 pounds of TCE were removed by the groundwater extraction and treatment system during 2010. This brings the cumulative total mass of chromium and TCE removed to approximately 22,231 and 2,164 pounds, respectively, since initiating operations in 1990. The mass of contaminants removed during the reporting period continued to decline compared to the previous reporting period. This is consistent with a continuing downward trend over the past few years and is reflected in the average influent concentrations of chromium and TCE at the Site. Figure 5 shows the cumulative removal amounts for total chromium and TCE since June 1999.

Figure 6 depicts the total chromium and TCE concentrations in the treatment system influent and effluent since 1999. Figure 7 provides an annual comparison of influent chromium and TCE concentrations over the past ten years.

## 3.3 Plume Monitoring

### 3.3.1 Semiannual Site-wide Groundwater Monitoring

Semiannual Site-wide groundwater monitoring was conducted in Spring 2010 and Fall 2010, following the EPA approval of associated QASP addenda (EA 2010a and EA 2010e). The semiannual sampling events were conducted as planned and no significant issues or problems were encountered.

Groundwater samples were submitted to CAS of Kelso, Washington for analysis. The samples were analyzed for chromium using EPA Method 200.7 and/or VOCs using EPA Method 8260B. When well purge water did not meet turbidity standards, a dissolved chromium sample was collected in addition to the total chromium sample. One sample delivery group from the Fall sampling event, including chromium and VOC data, was validated by EA personnel.

### **3.3.2 Water Level Gauging Program**

Depth-to-groundwater measurements were collected from monitoring and extraction wells at the Site during the Spring and Fall semiannual sampling events. Groundwater level data is collected to determine the groundwater flow direction and gradient. During both semiannual events in 2010, the measurements were made while the groundwater treatment system was actively pumping to assess groundwater flow under drawdown conditions.

The horizontal gradients for the alluvial and Troutdale aquifers were determined using data from the Fall 2010 water level gauging event. For the alluvial aquifer, the gradient across the Linde property was approximately 0.009 ft/ft. This area is impacted by the infiltration gallery. Downgradient, within the plume area, (using an average from just west of the Linde property to the toe of the plume) the gradient was approximately 0.004 ft/ft. The flow direction within the alluvial aquifer is generally to the west-northwest.

For the Troutdale aquifer, the average hydraulic gradient across the Site area was approximately 0.006 ft/ft. The flow direction in this aquifer is generally to the west-southwest.

Because the groundwater extraction system was actively pumping during water level gauging, the vertical gradient could not be determined accurately. Generalized groundwater elevation contour maps for the alluvial and Troutdale aquifers for the Fall 2010 water level gauging event are presented in Figures 8 and 9, respectively. The flow direction and horizontal gradient in both aquifers were similar to those observed previously.

Water level gauging and groundwater monitoring results indicate that hydraulic containment of the plumes has been maintained.

### **3.4 Infiltration Gallery Monitoring**

The Linde infiltration gallery was constructed on the Linde property in Fall 2005 to discharge treated groundwater from the OU-3 treatment system into the alluvial aquifer. In February 2006, the Linde infiltration gallery became operational and discharges to the City sanitary sewer were discontinued.

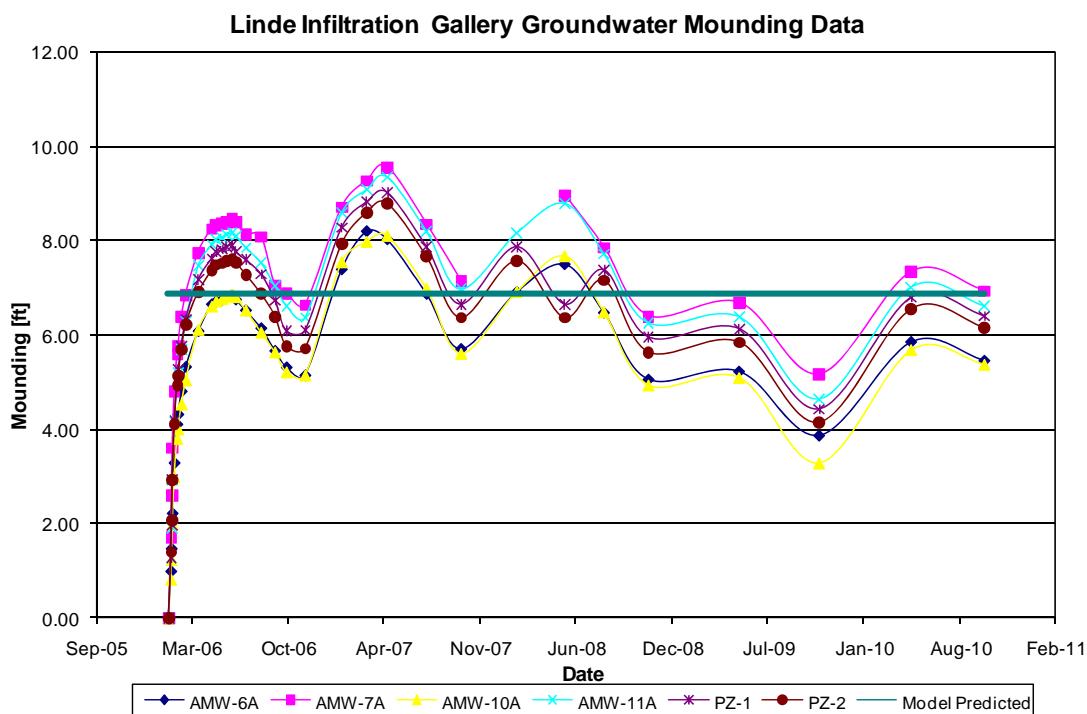
Groundwater samples are collected from four monitoring wells as part of the infiltration gallery monitoring program. The four wells are AMW-6A, AMW-7A, AMW-10A, and AMW-11A. Baseline sampling of these wells was conducted in October 2005, prior to the startup of the infiltration gallery. TCE was not detected in groundwater from these monitoring wells and chromium was detected at concentrations well below the cleanup level.

Effluent discharged to the Linde infiltration gallery has continued to have concentrations below the infiltration gallery discharge standards of 1.9 µg/L for TCE and 19.2 µg/L for total chromium. Monthly effluent results are presented in the Progress Reports (EA 2010c and EA 2010f) submitted to EPA in May and November. TCE and chromium concentrations in

groundwater from the infiltration gallery monitoring wells remain well below the cleanup levels. The groundwater monitoring results are provided in appendices A-1 and B-1.

Since startup of the infiltration gallery, groundwater elevations have been monitored to assess the impact on the water table near the gallery. The water table directly under the infiltration gallery is approximately 7 ft above the natural water table.

The following figure shows the water table fluctuations in the infiltration gallery area since startup in February 2006 compared to the maximum mounding predicted during the design of the infiltration gallery using the groundwater model developed for the Site. The difference between the actual and predicted change in water levels can be attributed to seasonal fluctuations in the water table. Water level observations during the 2010 reporting period did not indicate any inconsistencies. No changes to the infiltration gallery were made during the reporting period.



### 3.5 Systems Under Review

The following areas of the system may require future modifications:

- Clark County is about to begin development of several sports fields and related structures on parcel no. 144505-000. EA plans to decommission two unused wells on the Clark County parcel (AMW-22 and SW-1) and to modify the remaining monitoring wells, as necessary, to accommodate changes in the land elevation. In addition, several other Site monitoring wells which are no longer used will likely be decommissioned at the same time.

time. The work will be performed following receipt of approval from EPA and access agreements with the affected land owners.

- Chromium and TCE concentrations in groundwater from several extraction wells in the current toe-of-plume area are below the Site cleanup levels. An evaluation will be performed to determine if changes to pumping rates or discontinuation of pumping is appropriate at these wells. The Site groundwater model will be used to provide an updated capture zone assessment using proposed extraction system pumping rates.

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## 4. GROUNDWATER MONITORING AND TRENDS

This section presents the concentration trends observed in groundwater since 1995, when EPA assumed regulatory responsibility for the Site, with a focus on data collected during 2010. Groundwater sampling and analyses were conducted to monitor the groundwater quality in extraction and monitoring wells in accordance with the procedures in the Site QASP (EA 2004b). Groundwater sampling and analysis of the OU-2 monitoring wells on the Linde property was conducted in accordance with the OU-2 O&M Manual (EA 2004a).

Task-specific QASP addenda are prepared for each semiannual sampling event to be compliant with the schedule established in the Long-Term Monitoring Plan (LTMP; EA 2007) and updates. The sampling schedule is reviewed and updated annually. The sampling schedule for 2010 was presented in the 2009 Annual Status Report (EA 2010b), and updates provided in the response to EPA comments on that report (EA 2010d).

The MAROS software was used to perform an annual screening of groundwater monitoring data for the Site, as described in Section 6. Data used for the review were those collected from 1995 through the end of 2010. Results from this screening were used in conjunction with professional judgment to evaluate the need for changes to the well sampling frequencies for 2011.

Table 3 presents the 2010 well sampling frequencies along with the recommended changes for 2011. Also included in Table 3 are well construction details, historic maximum concentrations of TCE and chromium in each well, and the most recent concentrations of TCE and chromium in each well.

### 4.1 Well Groupings

To facilitate analysis of contaminant concentrations across the Site, sampling data are grouped by aquifer and geographical location as follows:

- Alluvial aquifer wells
  - Upgradient wells
  - TCE Source wells (includes OU-2 monitoring wells)
  - Proximal wells
  - Intermediate wells
  - Church of God wells
  - Toe-of-Plume wells (including Sentinel and Other toe wells)
- Troutdale aquifer wells.

The aquifer and geographic well groupings are presented on Figure 10. All wells except those identified as Troutdale aquifer wells are screened within or slightly below the alluvial aquifer.

## 4.2 Groundwater Trends

### 4.2.1 Overview

Groundwater monitoring results indicate that the current pumping scheme is maintaining control of the plume and that overall concentrations for both chromium and TCE are on decreasing trends.

The highest concentration of chromium during the 2010 reporting period was detected in the sample collected from well MW-4B (616 µg/L) during the Fall 2010 sampling event. The highest concentration of TCE was detected in the sample collected from well AMW-18 (200 µg/L) during the Spring 2010 event. The elevated TCE concentrations detected in well AMW-18 are from the Northern Plume (see Section 4.2.2.4) and do not relate to the OU-3 TCE plume (Site plume). The highest concentration of TCE in groundwater within the Site plume was detected in the sample from well MW-18E (130 µg/L) during the Fall 2010 event. Wells with 2010 groundwater sampling results exceeding the site cleanup levels for chromium and TCE are highlighted on Figures 11 and 12, respectively.

For this report, tables, figures, and graphs were used to assist in evaluating groundwater trends across the Site. The extent of impacted groundwater, as determined from well sampling results obtained in 1995 and Fall 2010, is presented on Figure 13 for chromium and on Figure 14 for TCE. These figures illustrate that groundwater remedial actions have been effective in mass removal and in reducing the footprints of both the chromium and TCE plumes.

Chromium and TCE concentration trends are presented in Appendices A and B, respectively. The information is presented both by well groupings and by individual wells. Data provided for the individual wells have been consolidated and are presented as the geometric mean for each year. Concentration trend charts for individual alluvial aquifer wells include additional statistical information obtained from the MAROS evaluation. This is discussed further in Section 6.

Specific information on trends observed in the well groupings within the monitoring network is discussed in the following sections. Concentration summary tables used in preparing these sections, including wells sampled and analytical results, are presented in Appendices A-1 (chromium) and B-1 (TCE).

### 4.2.2 Alluvial Aquifer

#### 4.2.2.1 Upgradient Wells

The Upgradient wells are located on the eastern half of the Linde property, east (upgradient) of the TCE source area (Figure 10). Four infiltration gallery wells are also included in this area. Groundwater samples from the wells were analyzed for chromium and TCE and concentrations detected were well below the cleanup levels during both sampling events.

#### 4.2.2.2 TCE Source Wells

The TCE Source wells are located on the western half of the Linde property (Figure 10), in the vicinity of the TCE-impacted soil. These wells are typically sampled for TCE only, as part of the OU-2 monitoring program. The OU-2 analytical results for the 2010 reporting period are presented in Table 1. For comparison, results of baseline sampling (samples collected prior to system start-up) are also presented on the table.

During 2010, four wells had TCE concentrations above the cleanup level of 5 µg/L during both Spring and Fall sampling events: AMW-2A, AMW-12A, AMW-53A, and MW-1A. These wells are all “A” level wells. “A” level wells are the shallowest wells of a well cluster and are the most impacted wells in this area. The number of wells sampled is shown on the following table.

TCE Source Wells	Spring 2010	Fall 2010
No. of Wells Sampled	9	15
No. of Wells with TCE Above the Cleanup Level	4	4

#### 4.2.2.3 Proximal Wells

The Proximal wells are located west of the maintenance building (former machine shop) on the Boomsnub property and east of NE St. Johns Road (Figure 10). These wells are proximal to the chromium source. Analytical results are presented in Appendices A-1 (chromium) and B-1 (TCE). All four extraction wells in this group (MW-6B, MW-10B, MW-10C, and PW-1B) were actively pumping and were sampled during the Spring and Fall 2010 sampling events. The number of wells sampled is shown on the following table.

Proximal Wells	Spring 2010	Fall 2010
No. of Wells Sampled for Chromium	4	11
No. of Wells with Chromium Above the Cleanup Level	1	4
No. of Wells Sampled for TCE	4	12
No. of Wells with TCE Above the Cleanup Level	2	5

#### Chromium

One of the four extraction wells sampled, MW-10C, had a chromium concentration above the 80 µg/L cleanup level in Spring (89.3 µg/L) but was below the cleanup level for the first time in the Fall (67.2 µg/L). During the Fall 2010 sampling event, chromium concentrations were above the 80 µg/L cleanup level in groundwater samples collected from four wells, MW-2A, MW-3A, MW-4A, and MW-4B. Groundwater samples from wells MW-4A and MW-4B, located near the chromium source, continue to contain some of the highest concentrations of chromium in groundwater at the Site (625 µg/L and 616 µg/L respectively). The chromium concentration decreased significantly in the groundwater sample from MW-2A, from 343 µg/L detected in Fall

2009 to 192 µg/L in Fall 2010; and increased significantly in the groundwater sample from MW-4A, from 363 µg/L detected in Fall 2009 to 625 µg/L in Fall 2010. However, such large fluctuations are typical for these wells. Historically, chromium concentrations in groundwater from wells in this area have fluctuated, with an overall decreasing trend.

### TCE

Notably, the TCE concentration in extraction well MW-6B dropped below the cleanup level for the first time during the Fall event. TCE concentrations exceeded the cleanup level in groundwater samples from the following five wells during the Fall event: MW-4B (5.9 µg/L), MW-9B (5.7 µg/L), MW-10B (18 µg/L), MW-12C (24 µg/L), and MW-13C (5.7 µg/L). TCE concentrations in groundwater samples from wells in this area generally remained constant or decreased in comparison to previous sampling results. In well MW-12C, the TCE concentration increased from 11 µg/L in Fall 2009 to 24 µg/L in Fall 2010; some fluctuation in TCE concentrations has previously been observed in groundwater samples from this well.

Historically, TCE concentrations in groundwater samples from this area have been on an overall decreasing trend.

#### *4.2.2.4 Intermediate Wells*

The Intermediate wells are located west of NE St. Johns Road, north and south of NE 78<sup>th</sup> Street (Figure 10). Analytical results are presented in Appendices A-1 (chromium) and B-1 (TCE). In general, chromium and TCE concentrations have been on a decreasing trend in groundwater samples collected from these wells since 1995, although the concentrations are still above the cleanup level in a number of wells. All five extraction wells in this area were actively pumping during both the Spring and Fall 2010 sampling events (MW-14C, MW-14E, MW-18D, MW-19D, and MW-20D). The number of wells sampled is shown on the following table.

Intermediate Wells	Spring 2010	Fall 2010
<b>No. of Wells Sampled for Chromium</b>	5	10
<b>No. of Wells with Chromium Above the Cleanup Level</b>	4	3
<b>No. of Wells Sampled for TCE</b>	8	15
<b>No. of Wells with TCE Above the Cleanup Level</b>	7	13

### Chromium

Chromium concentrations exceeded the cleanup level in both the Spring and Fall in groundwater samples from the following three wells: MW-14C, MW-18D, and MW-19D. Notably, the Fall sampling event was the first time in which the chromium concentration in extraction well MW-20D (76.7 µg/L) was below the cleanup level. Chromium concentrations in groundwater samples from wells in this area remained relatively constant or decreased in comparison to previous sampling results. Historically, chromium concentrations in groundwater from wells in this area have been on a decreasing trend.

**TCE**

Groundwater sampling of the Intermediate Wells for TCE included wells within the Site plume area and three monitoring wells (AMW-17, AMW-18, and MW-15E) which also monitor the Northern Plume area.

The maximum TCE concentration in Intermediate Well samples collected from the Site plume was 130 µg/L in well MW-18E during the Fall event. TCE concentrations in groundwater samples from wells in this area remained relatively constant or decreased in comparison to previous sampling results. Well MW-38 was sampled for the first time during the Fall 2010 event, at the request of EPA. TCE was detected at a concentration of 12 µg/L in the groundwater sample collected from well MW-38. Historically, TCE concentrations in groundwater samples from wells in this area have been generally stable or on a decreasing trend.

The maximum TCE concentration detected in samples collected from the Northern Plume area was 200 µg/L in well AMW-18 during the Spring sampling event. The TCE concentration in groundwater from well AMW-17 increased from 1.1 µg/L in Spring 2010 to 28 µg/L in Fall 2010, indicating the apparent arrival of the Northern Plume at this well. Additional discussion of the Northern Plume, including previous monitoring results, is provided in the Fall 2010 Semiannual Report (EA 2011)

#### *4.2.2.5 Church of God Wells*

The Church of God wells are located between the west side of the gravel roadway in the vacant field north of NE 78<sup>th</sup> Street and the western Church of God property line (Figure 10). The number of wells sampled is shown on the following table. In general, chromium and TCE concentrations in groundwater samples collected from wells in this area have been on a decreasing trend since 1995, although the concentrations are still above cleanup levels in several wells.

Church of God Wells	Spring 2010	Fall 2010
<b>No. of Wells Sampled</b>	9	12
<b>No. of Wells with Chromium Above the Cleanup Level</b>	0	0
<b>No. of Wells with TCE Above the Cleanup Level</b>	3	4

**Chromium**

Chromium was not detected above the 80 µg/L cleanup level in any of the groundwater samples collected during the reporting period from Church of God wells. Chromium concentrations in well AMW-14 were above the cleanup level in Fall 2009 but dropped below the cleanup level in the Spring 2010 (55.8 µg/L) and remained below in the Fall (55.0 µg/L).

**TCE**

Groundwater samples collected from three wells had TCE concentrations above the 5 µg/L cleanup level during both the Spring and Fall sampling events: AMW-27 (16 µg/L in both Spring and Fall), MW-21D (7.3 µg/L in Spring and 7 µg/L in Fall) and MW-22D (7.9 µg/L in Spring

and 8 µg/L in Fall). Well AMW-61 was only sampled during the Fall event and also had a TCE concentration above the cleanup level (6 µg/L). Concentrations in these wells continue on a decreasing trend.

#### *4.2.2.6 Toe-of-Plume Wells*

The Toe-of Plume wells are located west of the Church of God building (Figure 10). These wells are divided into two groups for discussion purposes: Sentinel wells and Other Toe wells. Linde initiated the TOPPS *in-situ* remediation program in September 2006 in order to achieve cleanup levels for TCE and chromium in the toe-of-plume area. The number of wells sampled is shown on the following table.

Toe-of-Plume Wells	Spring 2010	Fall 2010
<b>No. of Wells Sampled</b>	1	5
<b>No. of Wells with Chromium Above the Cleanup Level</b>	0	0
<b>No. of Wells with TCE Above the Cleanup Level</b>	1	1

**Sentinel Wells:** The Sentinel wells are monitoring wells located at or beyond the historical leading edge of the chromium plume. No Sentinel wells were sampled during the reporting period.

**Other Toe Wells:** Other Toe wells are located west of the Church of God property and east of the Sentinel wells. With one exception, chromium and TCE concentrations in groundwater samples collected from the Other Toe wells were below the cleanup levels in 2010. TCE concentrations in well MW-35 were slightly above the 5 µg/L TCE cleanup level for both the Spring (5.3 µg/L) and Fall (6.3 µg/L) sampling events. TCE concentrations in groundwater from well MW-35 have been fluctuating above and below the cleanup level since 2004.

#### *4.2.3 Troutdale Aquifer Wells*

The number of samples collected from the Troutdale aquifer wells is shown on the following table.

Troutdale Aquifer Wells	Spring 2010	Fall 2010
<b>No. of Wells Sampled</b>	1	11
<b>No. of Wells with Chromium Above the Cleanup Level</b>	0	0
<b>No. of Wells with TCE Above the Cleanup Level</b>	1	3

#### *Chromium*

Chromium was not detected above the 80 µg/L cleanup level in any of the groundwater samples collected during the reporting period from Troutdale aquifer wells. This is consistent with previous results.

**TCE**

TCE was detected above the 5 µg/L cleanup level in the groundwater sample collected during Spring 2010 (10 µg/L) from the private well on the Bennett property (Parcel No. 149147-000), and remained above the cleanup level during the Fall 2010 event (8.6 µg/L). TCE was also detected above the cleanup level in groundwater collected from wells AMW-24 (13 µg/L) and MW-33 (14 µg/L) during the Fall 2010 event. These concentrations are similar to those reported for the past several years.

**4.2.4 TCE as a VOC Indicator**

In addition to chromium and TCE, groundwater samples were also analyzed for additional VOCs as listed in the ROD (EPA 2000). Of these additional parameters only 1,1-dichloroethene (1,1-DCE) and bromodichloromethane exceeded cleanup levels during the reporting period.

TCE analytical results are used as a surrogate for the other VOCs in order to streamline data reporting. TCE continues to be an effective indicator of VOCs. In wells where TCE is below the cleanup level, the associated VOCs are also below the cleanup level. The selected VOCs with concentrations above the cleanup level were only found in wells where TCE was also detected above the cleanup level. For comparison purposes, the following table presents results for TCE and other VOCs that exceeded the cleanup level at least once during 2010. Wells where only TCE concentrations exceeded the cleanup level were not included on the table.

Well Group	Well	TCE	1,1-DCE	BDCM
<b>Spring 2010</b>				
TCE Source	AMW-53A	10	--	1.1
Intermediate	MW-14E	73	3.8	--
	MW-18D	62	1.1	--
	MW-19D	30	1.6	--
	MW-20D	41	3.5	--
	Church of God	MW-21D	7.3	1.3
Troutdale	Bennett	10	1.6	--
<b>Fall 2010</b>				
Intermediate	AMW-17	28	1.4	--
	AMW-59	76	18	--
	MW-14E	76	3.5	--
	MW-18D	66	1.2	--
	MW-18E	130	17	--
	MW-19D	34	1.8	--
	MW-20D	43	3	--
	PZ-39	97	12	--
Church of God	MW-21D	7	1	--
Troutdale	AMW-24	13	1.9	--
	Bennett	8.6	1.5	--
	MW-33	14	2	--
Cleanup or Guidance Level		5	1	1
Notes: Results reported in micrograms per liter (µg/L).				
--	=	No result above the cleanup level.		
BDCM	=	Bromodichloromethane.		
TCE	=	tricholorethene		
1,1-DCE	=	1,1-dichloroethene		

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## 5. OTHER ACTIVITIES

During the reporting period, the following additional activities were performed.

### 5.1 Access Agreements and Easements

Per the CD, EA continued pursuing access agreements and easements for non-Linde owned properties with the purpose of gaining access to conduct activities related to the CD. These agreements will comply with the requirements of Sections 25 and 26 of the CD (EPA 2007a). In 2010, EA was successful in obtaining two new recorded agreements with property owners. Recorded easement agreements or amendments are currently in place with twelve property owners. Negotiations are underway with several additional property owners. EA has requested help from, and continues to work with, EPA to gain access agreements from non-responsive property owners.

### 5.2 HydraSleeve™ Evaluation

Six monitoring wells (AMW-14, CPU-14, MW-2A, MW-4B, MW-18E, and MW-35) were sampled using both HydraSleeve™ passive groundwater samplers and low-flow sampling techniques to evaluate the possible future use of HydraSleeve™ samplers for groundwater monitoring at the Site. HydraSleeve™ samplers would replace the passive diffusion bag samplers (PDBS).

### 5.3 Sustainability Practices

Linde and EA have a commitment to sustainable practices at the Site. In the office and in the field, attempts are made to reduce, reuse and recycle materials/waste whenever possible. The following is a list of sustainability practices at the Site:

- Recycling cans, cardboard, paper, and plastic.
- Use of chlorine free, wood free, or recycled paper products for reports.
- Phasing out old plastic report covers and replacing them with plastic covers made out of recycled milk jugs.
- Submitting the majority of reports electronically.
- Re-using the back side of used paper to print draft documents and printing final documents double-sided.
- Receiving and storing a large portion of laboratory data electronically.

- Using passive PDBS for groundwater sampling in select wells where there is no dedicated pump, eliminating the use of disposable tubing.
- Using dedicated pumps in many wells, eliminating the use of disposable tubing.
- Using the infiltration gallery to discharge treated groundwater from the OU-3 treatment system back into the alluvial aquifer instead of the sanitary sewer, eliminating the processing of millions of gallons per year of clean water through the sewage treatment plant.

## 6. ANNUAL SCREENING OF GROUNDWATER MONITORING DATA

This section summarizes the third annual screening of groundwater monitoring data for the Site. The screening was conducted in accordance with the revised Closure Plan (EA 2009). The annual screening evaluates data collected at the Site since 1995 (the year the Site was placed on the National Priorities List) for each alluvial aquifer monitoring and extraction well currently sampled. The data is used to determine what changes, if any, should be made to current system operations and the well sampling schedule, and to determine if cleanup levels have been attained in groundwater.

A combination of quantitative and qualitative evaluations of the Site data was used to derive the recommendations for the annual screening. The Air Force Center for Environmental Excellence (AFCEE) MAROS version 2.2 was used for the quantitative evaluation. MAROS is a computer program developed to optimize long-term groundwater monitoring, determine when to terminate groundwater treatment, and demonstrate cleanup level attainment using statistics (AFCEE 2006). Using statistical analyses, MAROS is capable of making recommendations on sampling frequencies and is able to determine if groundwater concentrations are statistically below cleanup levels. The qualitative evaluation consisted of professional judgment based on Site experience. The quantitative and qualitative evaluations do not always reach the same conclusions. When this occurs, professional judgment takes priority.

Annual screening recommendations fall into five categories:

- Redundancy: Determines if a well provides duplicate data or unique data on a constituent (TCE and/or chromium) that cannot be seen in other wells.
- System Operations: Determines if modifications to operations are necessary to achieve concentrations below cleanup levels.
- Termination: Determines whether constituents detected in groundwater samples from wells are statistically below cleanup levels. Aids in the decision to terminate treatment and/or discontinue monitoring.
- Sampling Frequency: Determines sampling frequencies for wells that require continued monitoring.
- Attainment: Used in the analysis of attainment wells as identified in the Closure Plan (EA 2009). Attainment wells are considered “attained” if contaminant concentrations in post-treatment samples from the well are statistically below cleanup levels. Aids in the decision to close down an area of the Site and leads to Site closure.

Factors used in the quantitative evaluation are presented in the 2010 MAROS Results Summary Table (Table C-1). In the table, wells are presented by well groupings (as presented in Section 4.1) to demonstrate what is happening in specific areas of the plume. Note that wells

designated for no further sampling in the 2009 Annual Report, or prior, are not included in this evaluation. Statistical summaries for each well are included in Appendices A-3 (chromium) and B-3 (TCE). Outputs created by MAROS during the evaluation are included in Appendix C.

## 6.1 Redundancy

Monitoring of a well may be discontinued based on the redundancy analysis in MAROS. This analysis evaluates whether or not a well provides unique information and recommends elimination of wells that do not provide unique information. If MAROS indicates a well is statistically redundant for both TCE and chromium, it may be eliminated from future monitoring because there will be no statistically significant loss of information.

The MAROS redundancy analysis is based on the Delaunay method. “The well redundancy analysis using the Delaunay method is designed to select the minimum number of sampling locations based on the spatial analysis of the relative importance of each sampling location in the monitoring network. The approach allows elimination of sampling locations that have little impact on the historical characterization of a contaminant plume” (EPA 2007b).

No wells were found to be redundant for TCE or chromium during the 2010 evaluation (Table C-1).

## 6.2 System Operations

If contaminant concentration trends in a well are increasing or fluctuating above and below cleanup levels, modifications to the extraction system operations may be necessary. Trend analysis was conducted using MAROS and graphs of contaminant concentrations. Professional judgment was used to determine if continued operations would bring the well into compliance with cleanup levels or if modifications to system operations are necessary.

MAROS uses the Mann-Kendall nonparametric evaluation to determine the concentration trend (Mann-Kendall trend) for each well. The Mann-Kendall evaluation is considered to be one of the best ways to evaluate concentration trends because it handles data variation well and it does not assume the data fits into a specific distribution (EPA 2007b). Some wells will not have sufficient data for the Mann-Kendall evaluation to output a trend and MAROS will indicate that the well concentration has no trend.

In some cases where the Mann-Kendall trend indicates an increasing or a possibly increasing concentration trend, the trend is due to data outliers or different detection limits and may not be a true representation of the trend. For these wells, a qualitative evaluation of the trend graphs was used to determine if any action needed to be taken.

The Mann-Kendall trends for TCE and chromium are presented in Table C-1. For wells with Mann-Kendall trends that were increasing or possibly increasing, graphs of the data were reviewed. In a number of cases, the increasing or possibly increasing trends were due to recently reported “J” flagged (estimated) concentrations, between the method detection limit (MDL) and

the method reporting limit (MRL). MAROS interprets these results as higher than “U” flagged concentrations, or concentrations reported below the MRL. For example, MAROS would interpret a result of 0.32 J (estimated)  $\mu\text{g}/\text{L}$  as higher than 0.5 U (not detected)  $\mu\text{g}/\text{L}$ . In a few cases, contaminant concentrations have fluctuated somewhat over time, or have increased slightly but remain below the cleanup level.

Although an overall increasing trend is indicated (Table C-1) for well AMW-18, TCE concentrations in this well have been on a decreasing trend since concentrations in the well peaked in January and May 2008 (460  $\mu\text{g}/\text{L}$  in January and May). TCE contamination in the AMW-18 area was investigated and reported in the *AMW-18 Area Investigation Report* in 2008 (EA 2008). It has been concluded that the elevated TCE concentrations in this area are related to a separate plume (Northern Plume) north of the Site TCE plume. No system modifications are recommended based on the presence of this offsite plume.

### 6.3 Termination

“Termination”, in this annual screening process, refers to the termination (shutdown) of an extraction well or the discontinuation of monitoring of a well. The MAROS Data Sufficiency module uses the sequential T-test to determine if contaminants in groundwater are statistically below cleanup levels (AFCEE 2006). This aids in the decision to terminate treatment and/or discontinue monitoring.

The sequential T-test outputs two “cleanup statuses” per well, one for data with a normal distribution and one for a lognormal distribution. The coefficient of variation (COV) was used to determine which distribution best represents the data collected from each well. The COV is a measure of the variation of data points from the mean. If the COV was less than 1.00, the data showed little scatter and the normal distribution results were used. If the COV was greater than 1.00, the lognormal distribution results were used.

The sequential T-test classifies wells as Attained, Continue Sampling, or Not Conducted (N/C). “Attained indicates the mean concentration is significantly below the cleanup goal, and has achieved the TargetLevel” (AFCEE 2006). The *TargetLevel* default value is 0.8 times the cleanup goal. MAROS recommends continuing sampling for wells that need more data to be considered attained and statistically below cleanup levels. The sequential T-test was not conducted on wells with a cleanup status N/C due to their small sample sizes (less than four samples).

The cleanup status, shown on Table C-1, was used to determine if the contaminant concentration was statistically below cleanup levels. With the exception of TCE Source wells, only wells that were classified as attained for both chromium and TCE were considered statistically below cleanup levels based on the MAROS definition. TCE Source wells only need to be statistically below cleanup levels for TCE, since the area is upgradient of the chromium plume and not monitored for chromium.

For extraction wells that are actively pumping when MAROS indicates cleanup has been achieved for TCE and chromium, pumping may be terminated. Monitoring will continue at these wells to ensure that cleanup levels are maintained as the well returns to equilibrium.

For a number of monitoring wells, the most recent MAROS evaluation concluded that TCE and/or chromium concentrations are statistically below the cleanup level and no further sampling is required. These wells are indicated on Tables 3 and C-2. Wells for which previous MAROS evaluations concluded that TCE and/or chromium concentrations were statistically below the cleanup level, and which were previously designated for no further sampling, are also listed in Table C-2.

#### **6.4 Sampling Frequency**

As part of the Annual Screening, the current sampling frequency for each well is evaluated and, if appropriate, revised. When proposing a revised sampling frequency for a well, the following factors were considered: the current sampling frequency, the MAROS recommended sampling frequency, the use of the well at the Site, and whether the constituents of concern are statistically below the cleanup levels. These factors are presented in the Wells and Recommended Sampling Frequencies Table (Table 3).

For wells with groundwater concentrations statistically below cleanup levels for TCE and/or chromium, sampling will be discontinued for TCE and/or chromium unless the qualitative analysis identifies a need for data from the well. For wells that are not identified for discontinuing sampling, MAROS uses a Modified Cost Effective Sampling Method to propose sampling frequencies for individual wells (AFCEE 2006). The resulting frequencies are “based on the magnitude, direction, and uncertainty of its concentration trends” (EPA 2007b). The recommendations made by MAROS are considered preliminary since they are the lowest frequencies needed to provide the adequate amount of data to reach statistical cleanup and may not correspond with the monitoring objectives of that well. For example, if MAROS recommends annual sampling, but the well is used to monitor treatment system performance, sampling may be conducted more frequently until the treatment is complete. Alternatively, for wells not designated as an attainment well, MAROS may recommend more sampling than is necessary.

Table 3 shows the current (2010) sampling frequency for each well, along with the MAROS recommended sampling frequency. These were evaluated for each well and sampling frequency recommendations for 2011 were determined using professional judgment. Recommended changes to the sampling frequencies (2011 recommendations) are included in Table 3 and summarized in Table 4. More detailed descriptions of the reasoning behind the recommended changes are provided in Table C-3.

The qualitative evaluation included a review of wells that are part of a well cluster. Well clusters may include wells with designations of A, B, C, D, and E. These alphabetical designations represent different well screen depths. In each well cluster, typically the most impacted well is sampled the most frequently. In some well clusters, this means that chromium is sampled more

frequently in one well while TCE is sampled more frequently in another well. In a few cases, one of the wells in a cluster is an extraction well and is sampled according to the schedule for extraction wells. Following many years of sampling well cluster wells, the most impacted wells have typically remained the same. Sampling of wells screened at less than optimal depths in a cluster does not provide any additional data of use in site decision making; therefore, those less than optimal wells may be recommended for no further sampling. Recommended changes to the sampling frequencies based on the well cluster review are summarized in Table C-3.

Since the OU-3 groundwater pump and treat system treats the alluvial aquifer and not the Troutdale aquifer, the MAROS analysis was not used on Troutdale wells. A qualitative analysis was completed to re-evaluate the sampling frequencies for the Troutdale wells. No changes in sampling frequency were recommended for these wells. General information for Troutdale aquifer wells is provided in Table 3.

Wells designated for no further sampling in the 2009 Annual Report and response to EPA comments (EA 2010d) have been removed from the MAROS evaluation tables and sampling frequency tables. These wells, along with a brief description of the basis for their removal from sampling, are listed in Table C-2.

Wells recommended for no further sampling in this report are included in the MAROS evaluation tables and sample frequency tables, and are further described in Table C-2. Wells for which one of the parameters (chromium or VOCs) is being sampled but the other has been discontinued, are also listed in Table C-2 as well as in the other tables.

TCE and chromium concentrations continue to decrease at the site. The most important data continues to be that in the active remediation areas, including the OU-3 extraction wells and the OU-2 source removal area. This data is critical to decision making at the site. Frequent sampling of wells with no detectable TCE or chromium, or with TCE and chromium concentrations consistently below the cleanup levels, is not necessary. If increases in contaminant concentrations are noted in a sampled well, additional samples may be collected from nearby wells. Wells recommended for no further sampling will still be available for future sampling, if needed.

## 6.5 Attainment

Attainment monitoring is performed on a limited number of wells to assess whether post-treatment concentrations remain statistically below cleanup levels. Attainment monitoring is conducted on a subset of wells that represent different areas of the plume. The guidelines for handling the analytical results from attainment monitoring are presented in the Closure Plan (EA 2009). The following areas of the plume (as defined in the LTMP [EA 2007]) were selected for attainment monitoring:

- TCE Source Area
- Proximal Area
- Intermediate Area
- Church of God Area

- Other Toe-of-Plume Area
- Sentinel Toe-of-Plume Area.

The MAROS Data Sufficiency module uses the sequential T-test to classify wells as attained. With the exception of the TCE Source wells, only wells that have reached attainment for both constituents (TCE and chromium) will be considered attained. Table 5 presents the complete analysis of the attainment wells. A summary is presented below.

Attainment Well Name	Wells Statistically "Attained" Cleanup Goals
<b>TCE Source Wells</b>	
AMW-12A	No
MW-1A	No
<b>Proximal Wells</b>	
MW-6B	No
MW-10C	No
PW-1B	No
<b>Intermediate Wells</b>	
MW-14E	No
MW-18D	No
MW-19D	No
MW-20D	No
<b>Church of God Wells</b>	
MW-21D	No
MW-26D	No
MW-27D	No
<b>Other Toe Wells</b>	
MW-31	No
MW-41	No
<b>Sentinel Toe Wells</b>	
AMW-45	Yes
MW-47	Yes

Wells in the Sentinel Toe well grouping are monitoring wells located at or beyond the historical leading edge of the chromium plume and are a part of the Toe-of-Plume wells. Chromium concentrations in groundwater samples collected from the Sentinel Toe well grouping have remained consistently below the cleanup level. TCE has never been detected in the Sentinel Toe well grouping. The 2008 MAROS analysis determined that the groundwater samples from the attainment wells for the Sentinel Toe wells group attained the cleanup goals. With EPA approval, this area of the plume is no longer monitored. The “Other Toe of Plume” area is now the most downgradient plume area being monitored.

## **6.6 Annual Well Screening Conclusions and Recommendations**

Based on the results of the 2010 annual screening of the groundwater monitoring data, the following conclusions are made:

- No modifications to system operations are necessary at this time.
- TCE and/or chromium concentrations in groundwater from several wells were found to be statistically below the cleanup level.
- Changes to sampling frequencies are recommended based on the results of the MAROS evaluation and on the qualitative review. Well sampling frequency recommendations for 2011 are provided in Table 4. Further description of the reason for the changes is provided in Table C-3.

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## 7. CONCLUSIONS, RECOMMENDATIONS, AND PLANNED ACTIVITIES

The following sections summarize the conclusions regarding the 2010 reporting period, as well as recommendations and planned activities for 2011.

### 7.1 Conclusions

In order to meet the operating objectives for OU-2 and OU-3, planned activities for 2010 were recommended in the 2009 Annual Status report. The status of these planned activities is summarized below:

- **Rebound testing/system modifications proposed for Church of God sports fields –** Well MW-27D is in an area of the Church of God property proposed for development. Well MW-25D is located downgradient of well MW-27D. The pump in extraction well MW-27D was turned off in November 2009 and the sampling frequency for wells MW-27D and MW-25D was increased to quarterly to monitor for potential contaminant rebound. Rebound testing was performed to determine if the extraction system piping to well MW-27D can be disconnected when the property is developed. Following one year of quarterly monitoring, no evidence of contaminant rebound was observed in either well. Chromium and TCE concentrations remained well below the cleanup level in both wells. The planned development of the Church of God property has been delayed and may not take place for several years. However, based on the monitoring results, the extraction system piping to well MW-27D can be removed.
- **TOPPS Sampling –** Sampling of TOPPS wells was reduced as recommended. Groundwater monitoring results for 2010 show continued effectiveness of the treatment.
- **Continue to work on obtaining easements and access agreements —** Negotiations continued with numerous property owners to obtain easements and access agreements. During 2010 EA was successful in obtaining two new recorded agreements with property owners.
- **Replace the pump in well MW-33 prior to the sampling event in Fall 2010 –** Repairs were made to MW-33 well by installing a new flush mount well monument and refurbishing the dedicated pump. The well was also redeveloped by surging, brushing and pumping.
- **Sample monitoring wells in accordance with the updated sampling schedule included on Tables 3 and 4 –** Monitoring wells were sampled in accordance with the sampling schedule presented in the 2009 Annual Report (EA 2010b) and in the response to EPA comments on that report (EA 2010d).

## 7.2 Recommendations and Planned Activities for 2011

The following activities are planned for the 2011 reporting period:

- **System modifications on Church of God property** – No rebound in chromium or TCE concentrations was observed in groundwater from wells MW-25D or MW-27D after turning off the pump in well MW-27D. Chromium and TCE concentrations remain well below the cleanup level in both wells. Therefore, it is recommended that the pump in well MW-27D remain off and that the sampling frequency for the two wells be decreased. Well MW-25D will be sampled semiannually in accordance with the LTMP schedule for active extraction wells, and well MW-27D will be sampled annually in accordance with the LTMP schedule for inactive extraction wells.

Chromium and TCE concentrations in groundwater from several additional extraction wells in the current toe-of-plume area (on Church of God property) are below the Site cleanup levels. An evaluation will be performed to determine if additional changes to pumping rates or discontinuation of pumping additional wells is appropriate in this area. The Site groundwater model will be used to evaluate the impact of proposed extraction system pumping rate changes on groundwater flow and contaminant capture.

- **Discontinue TOPPS Sampling** – Chromium and TCE concentrations have remained below the cleanup level for four years in the TOPPS wells (AMW-63 and MW-41), indicating that the TOPPS treatment has been effective. Therefore, it is recommended that sampling cease for TOPPS monitoring. Sampling will continue for well MW-41 on an annual basis as an attainment well.

During the Fall 2010 sampling event a grab sample of the purge water from wells MW-41 and AMW-63 was collected and analyzed for total organic carbon (TOC) to evaluate the need for continued separation of this water. A treatment system influent sample was collected for comparison. Based on the results, segregation and special handling of the TOPPS purge water no longer appears to be necessary. The TOC concentration in the TOPPS well purge water sample (1.05 milligrams per Liter [mg/L]) was lower than that in the influent water sample (1.60 mg/L), indicating that TOC concentrations in the TOPPS area have returned to normal levels. Therefore, it is recommended that the TOPPS purge water be handled in the same manner as other purge water at the Site.

- **Toe of Plume hotspots** – The use of an *in-situ* treatment, similar to that used in the successful TOPPS program, will be evaluated for reducing contamination in the MW-35 and AMW-27 areas.
- **Continue to work on obtaining easements and access agreements.**
- **Well modifications on the Clark County property** – Decommissioning of two unused monitoring wells on the Clark County sports field property is planned before the start of

construction of the sports fields, anticipated to begin in Spring 2011. Monitoring wells remaining on the sports field property will be modified as needed, to accommodate changes in the land elevation. Additional unused Site monitoring wells may be decommissioned at the same time, with EPA approval.

- **Continue to cooperate with EPA on investigation of the Northern Plume.**
- **Sample wells in accordance with the updated sampling schedule.**

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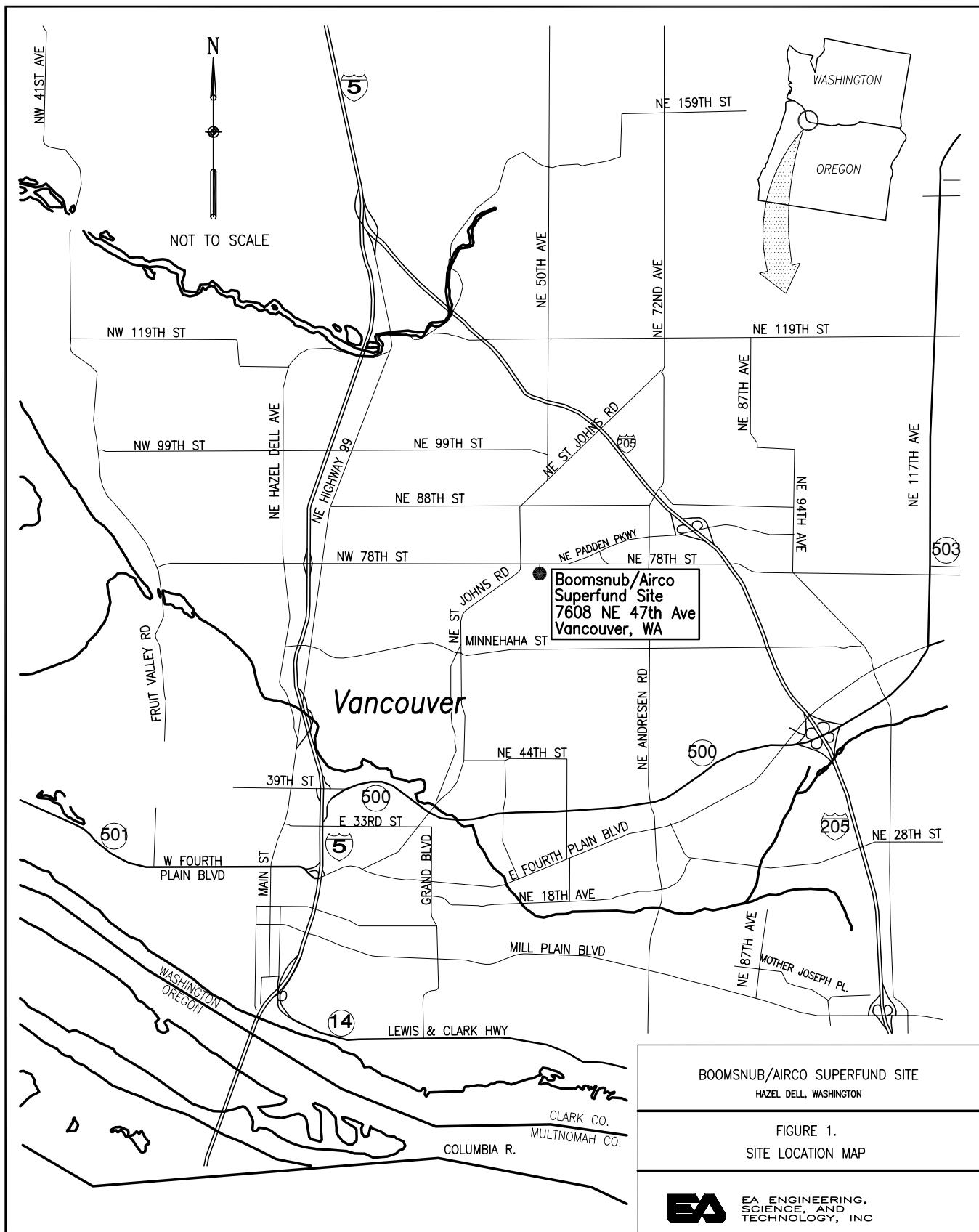
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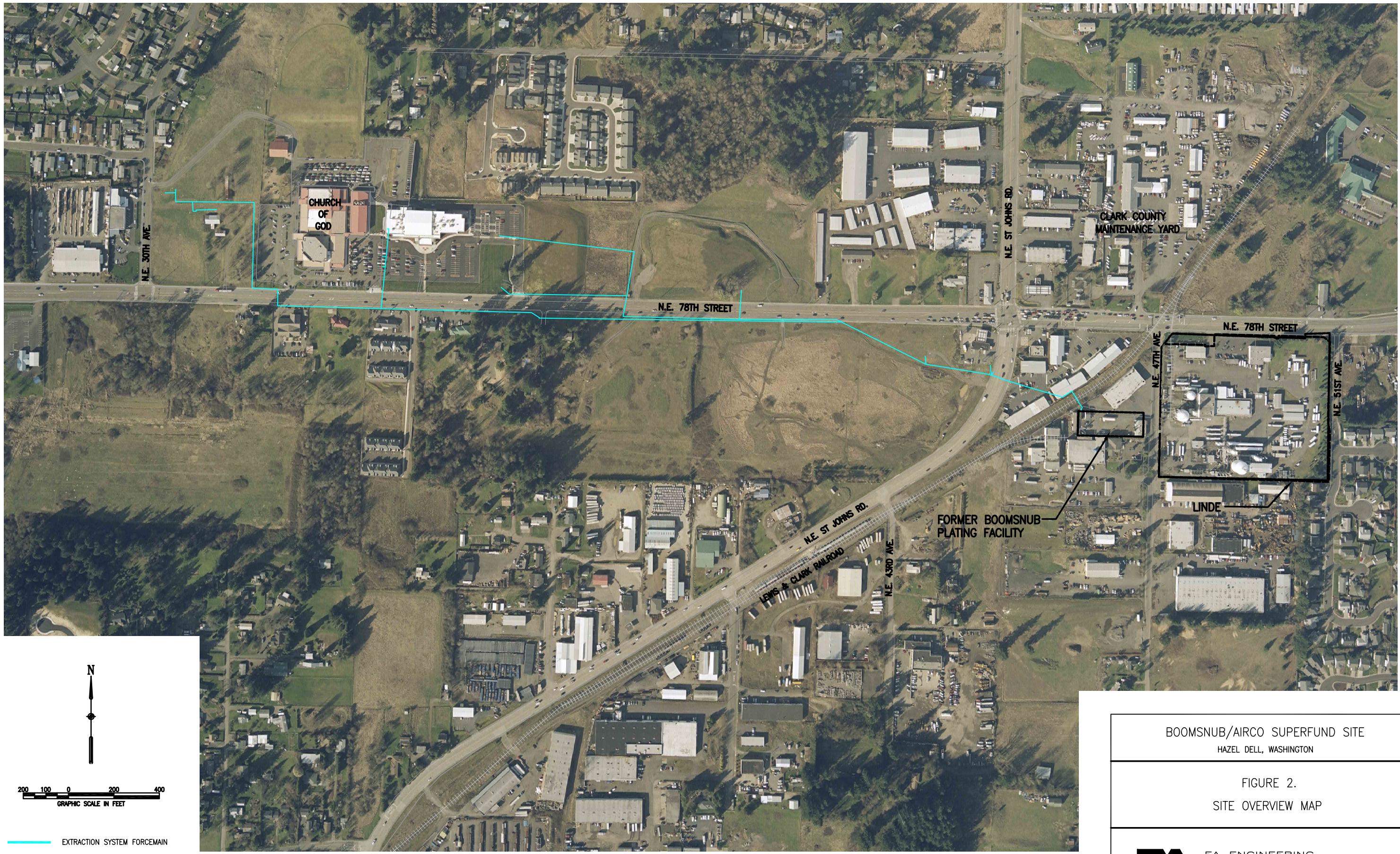
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## **FIGURES**



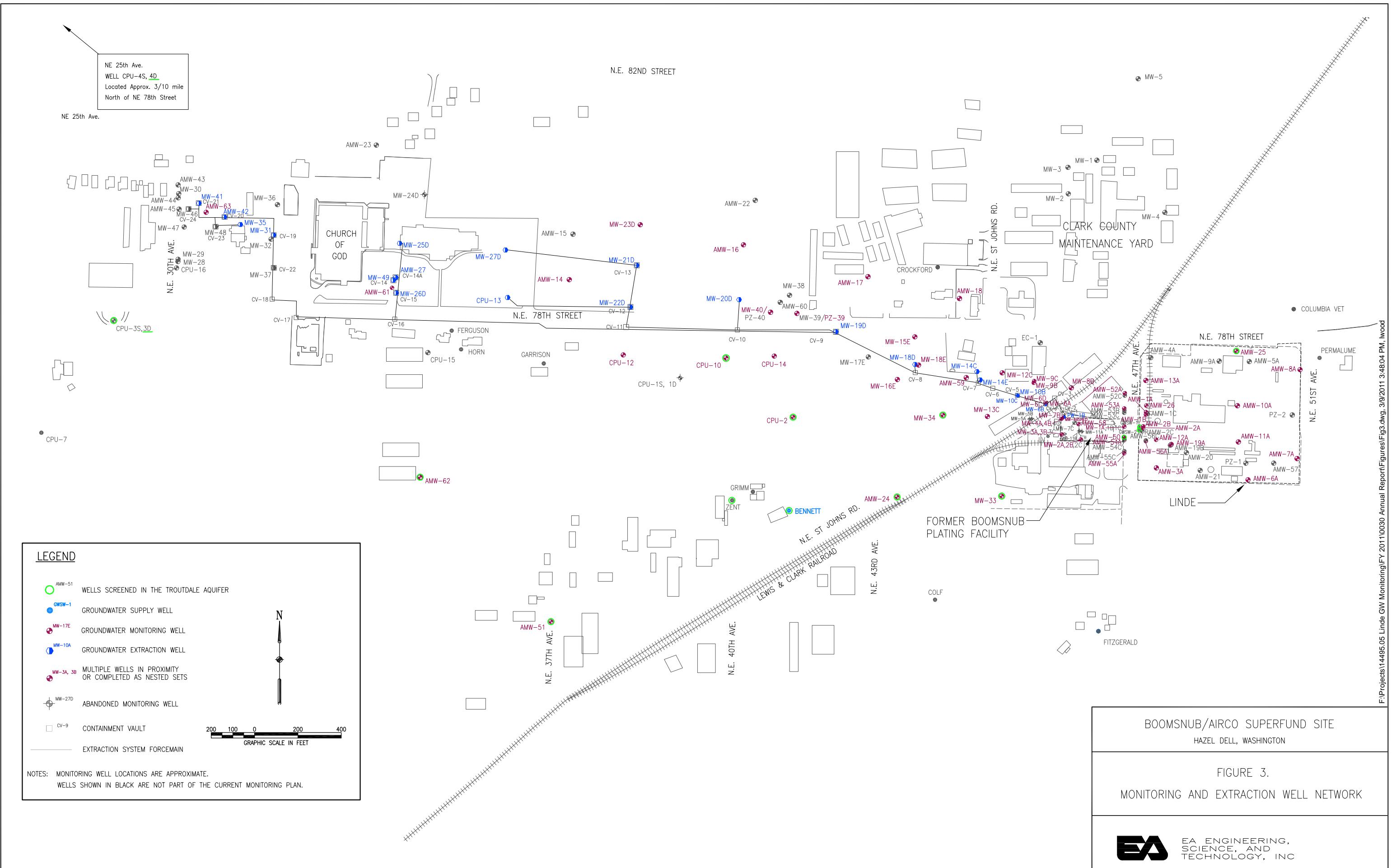


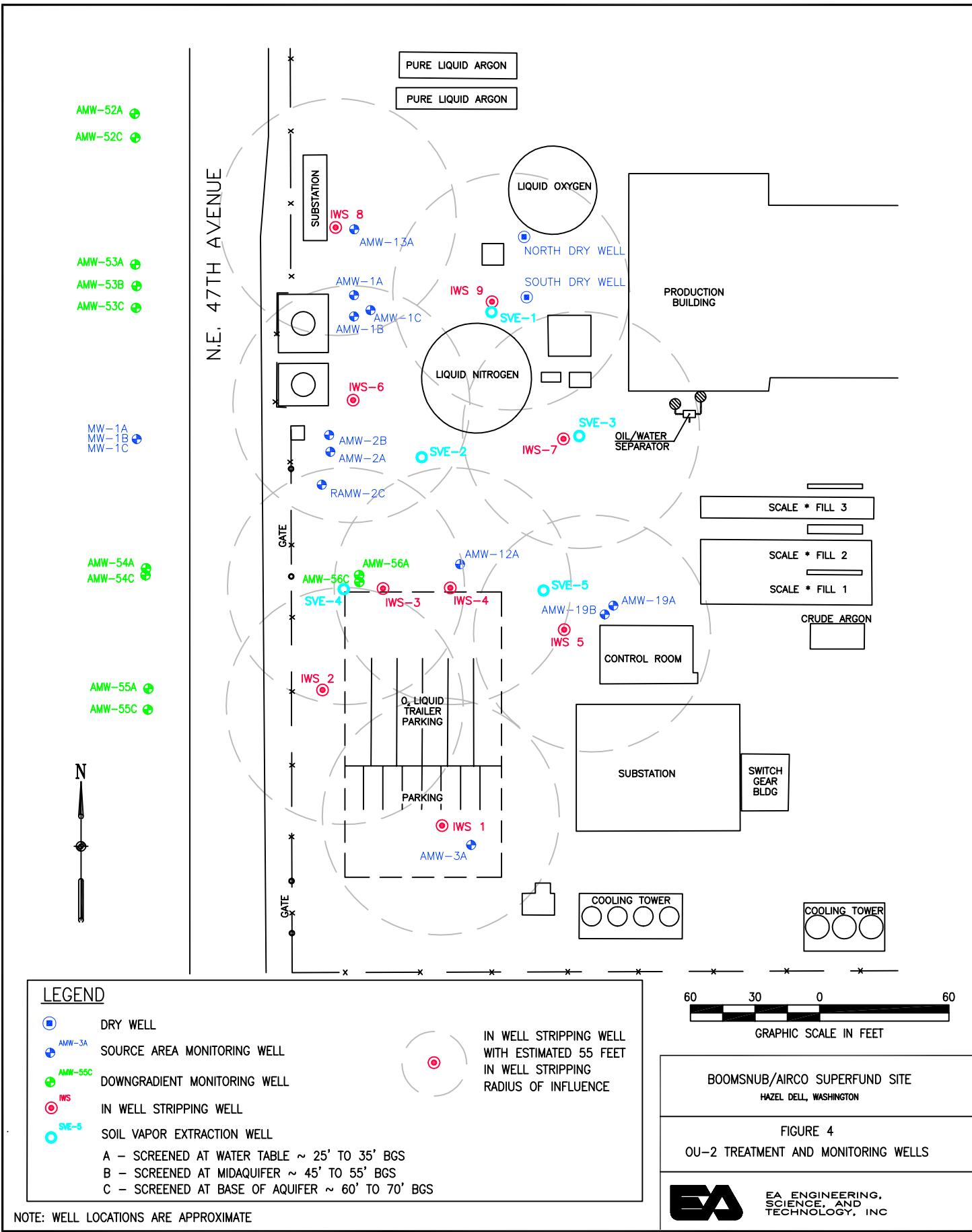
## FIGURE 2. SITE OVERVIEW MAP

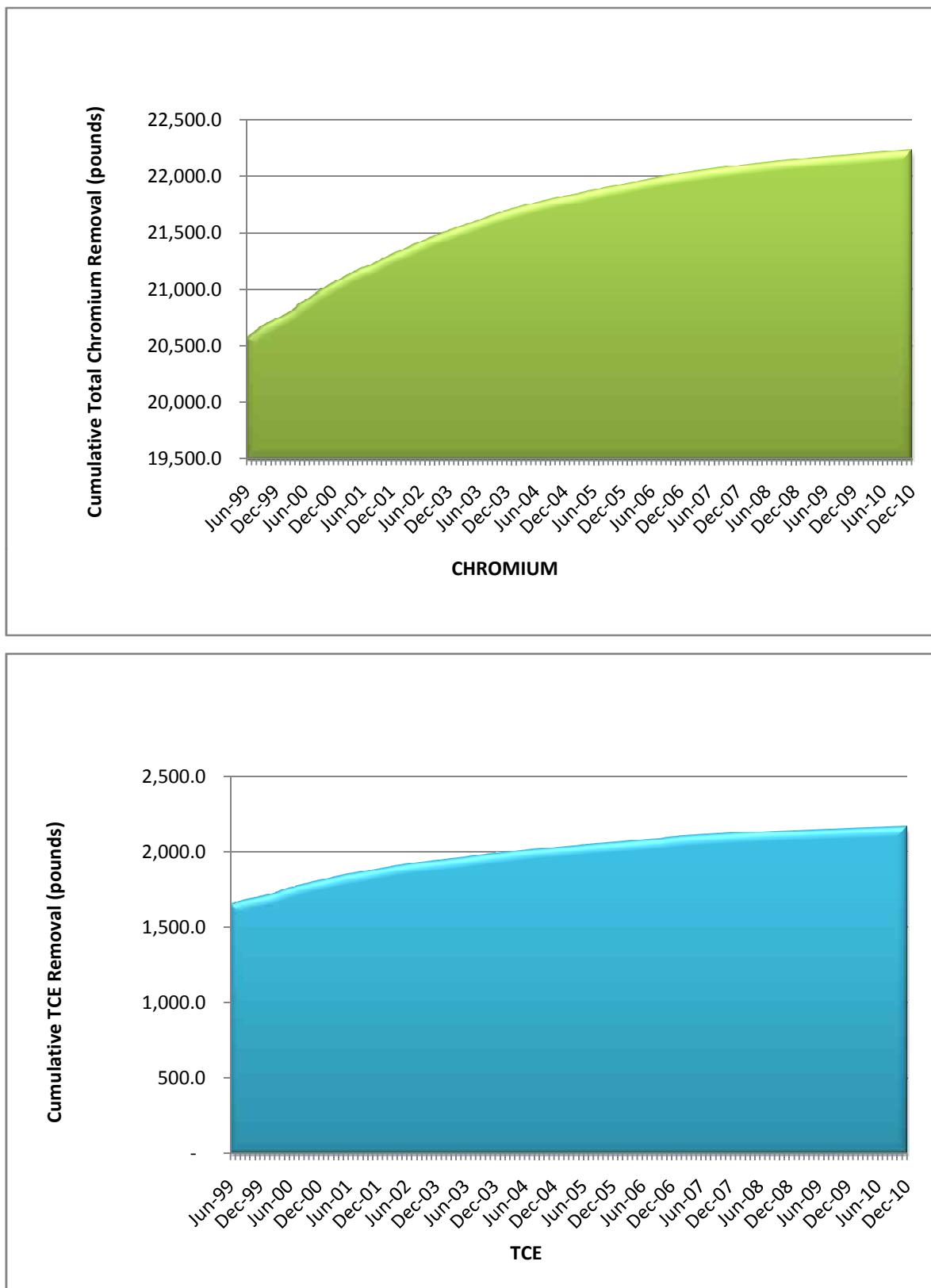
BOOMSNUB/AIRCO SUPERFUND SITE  
HAZEL Dell WASHINGTON

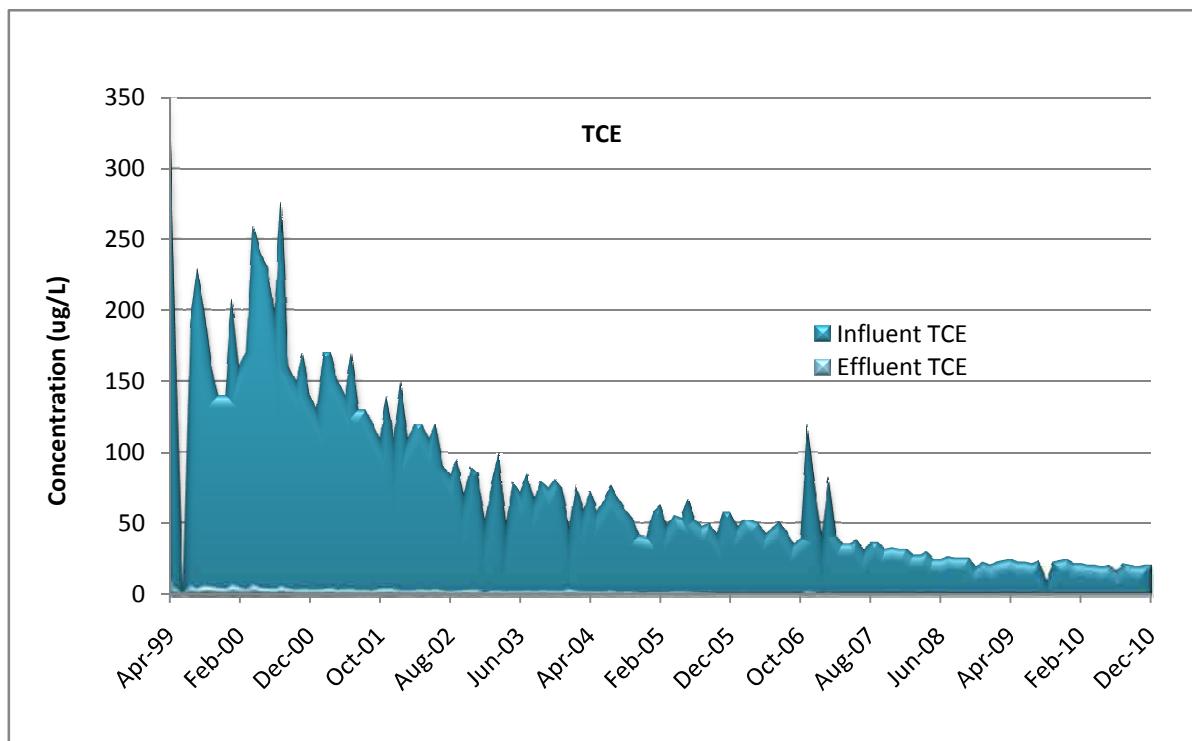
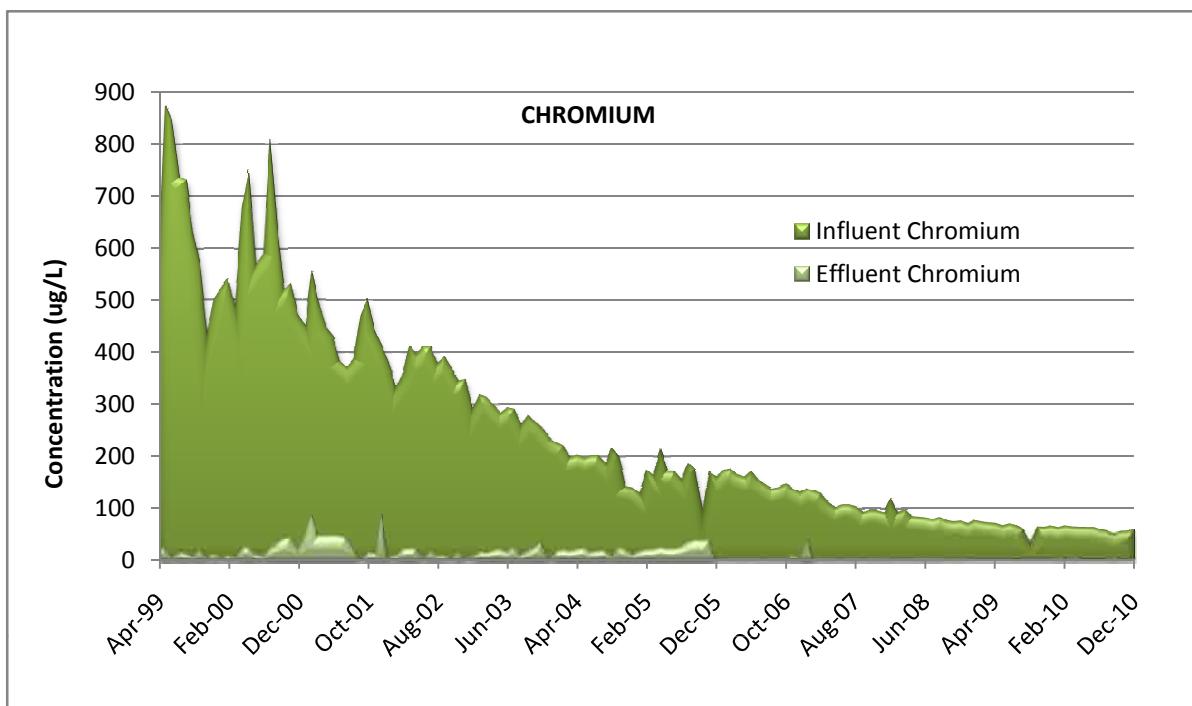


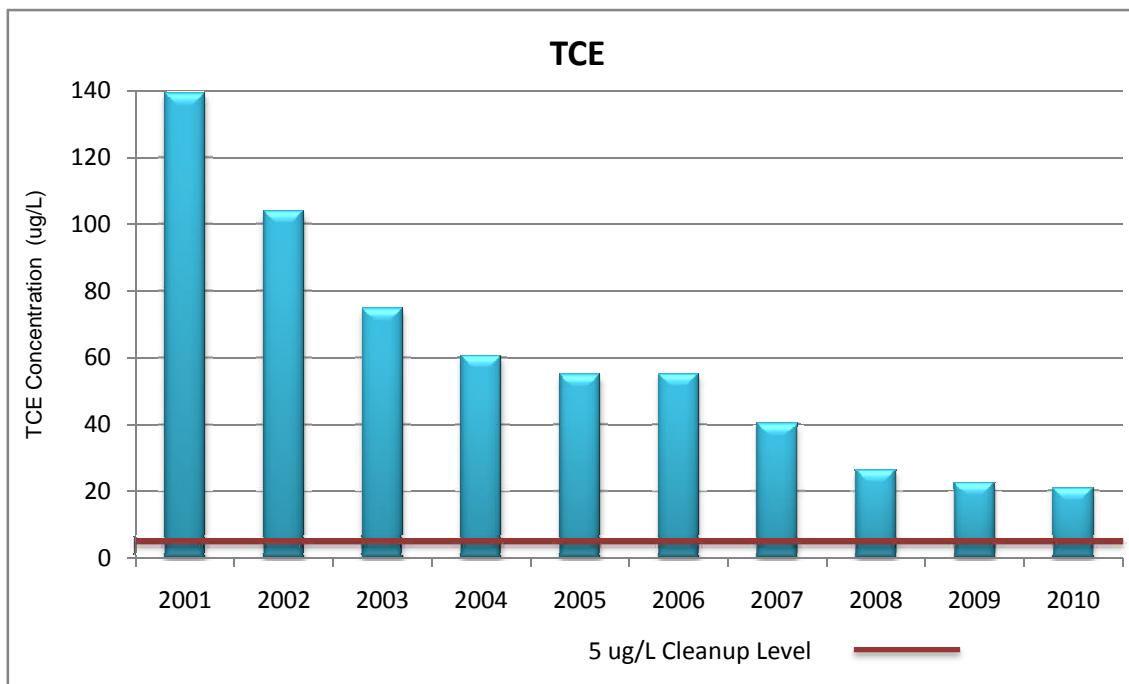
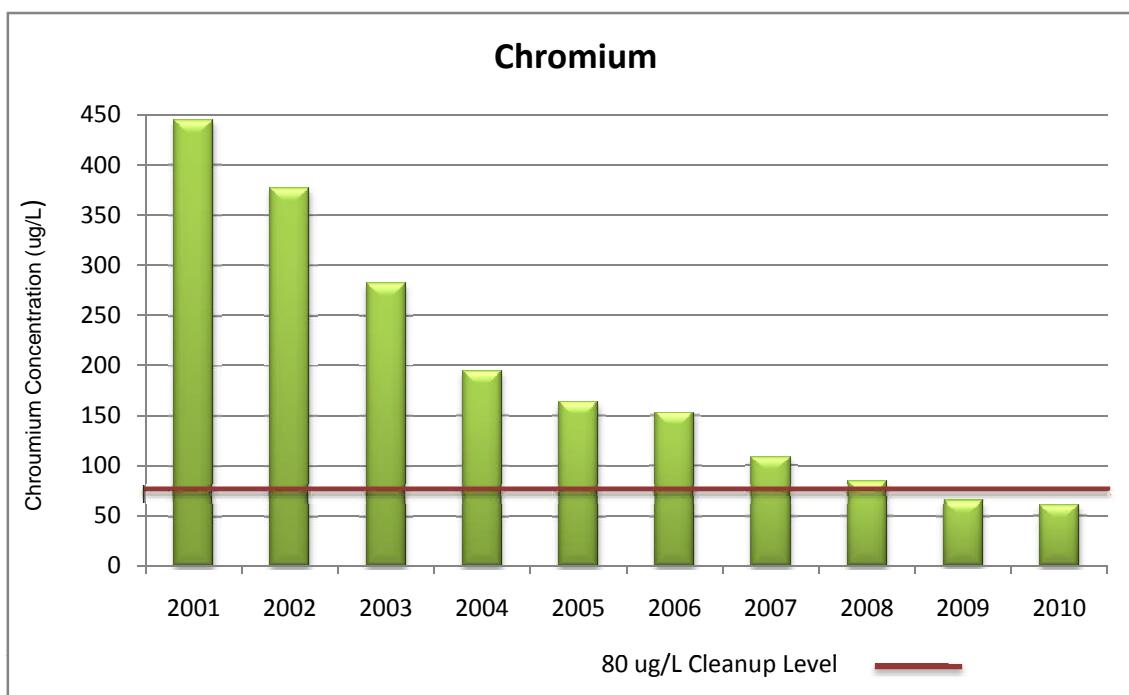
**EA ENGINEERING,  
SCIENCE, AND  
TECHNOLOGY, INC**



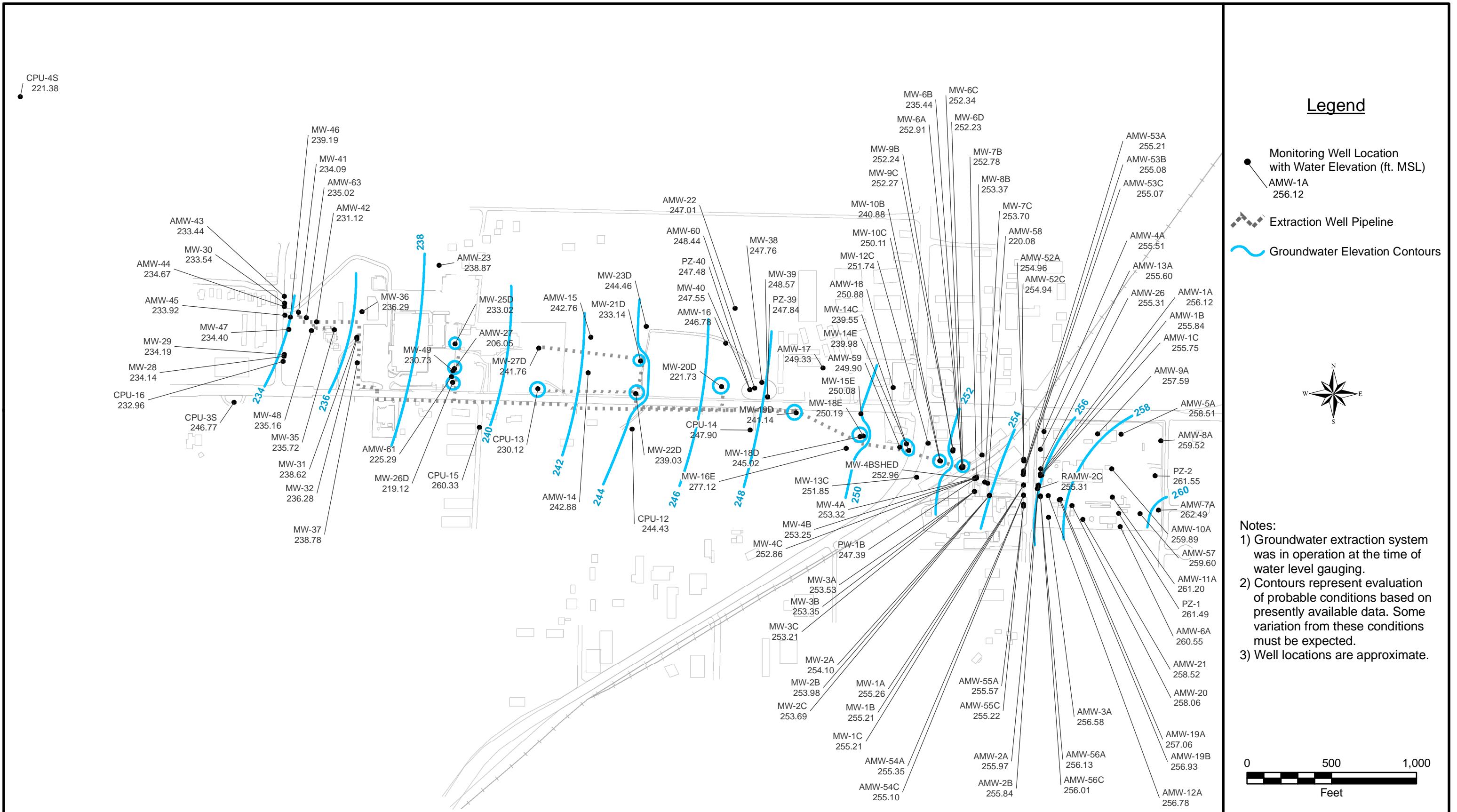


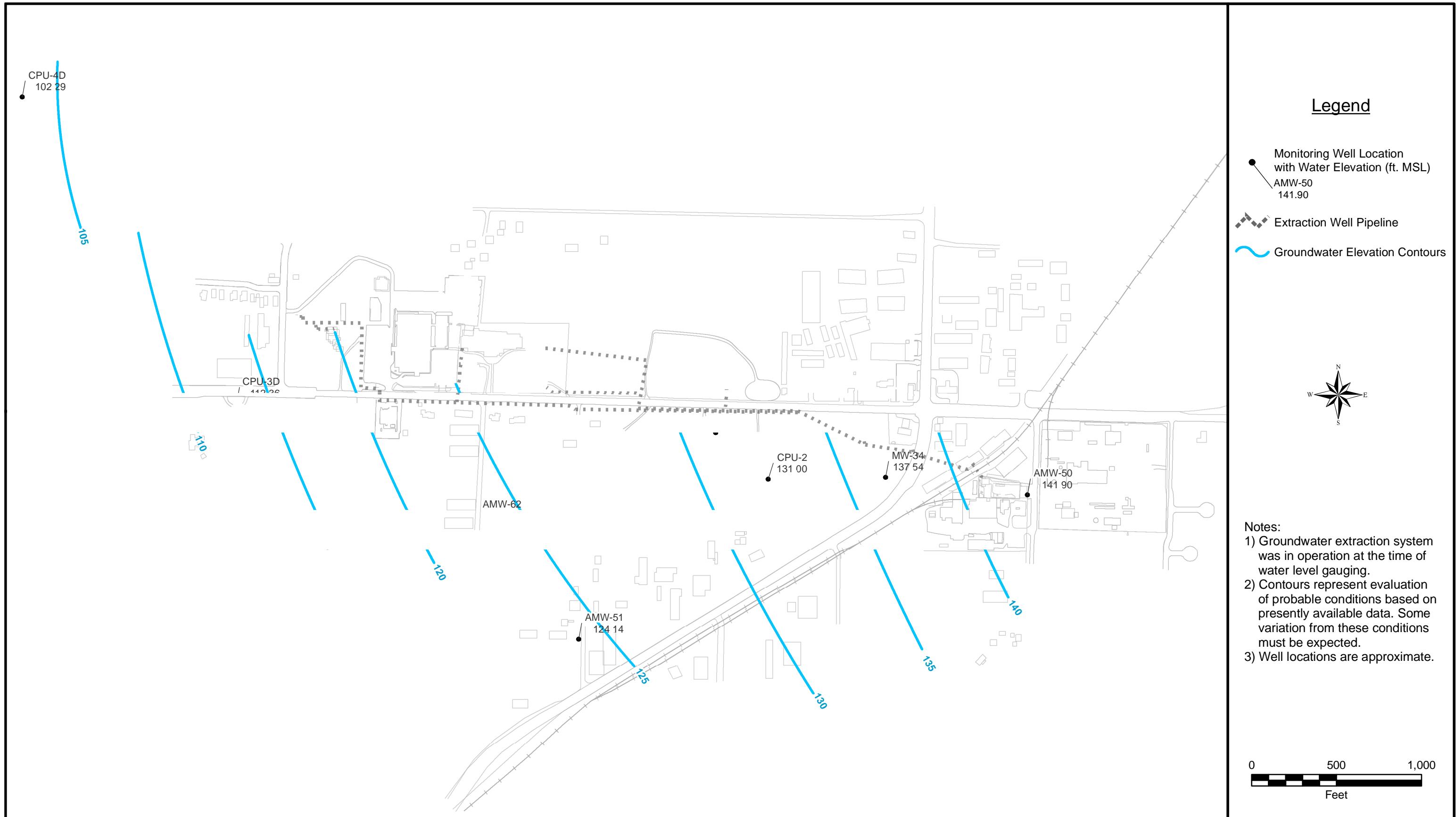
**FIGURE 5. CUMULATIVE REMOVAL OVER TIME**

**FIGURE 6. INFLUENT AND EFFLUENT CONCENTRATIONS OVER TIME**

**FIGURE 7. INFLUENT CONCENTRATIONS OVER TIME**

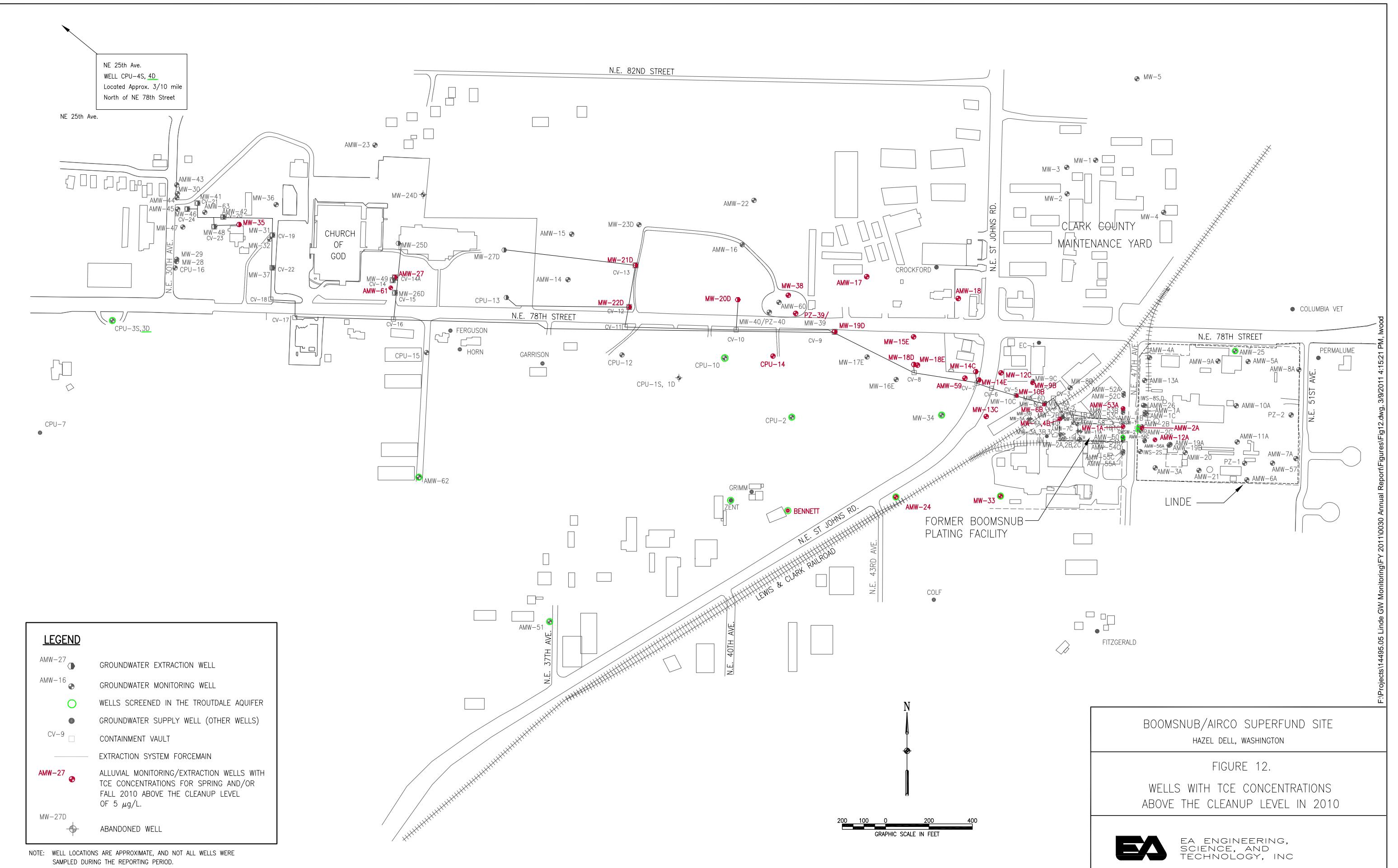
Note: Concentrations per year are an average of monthly data.





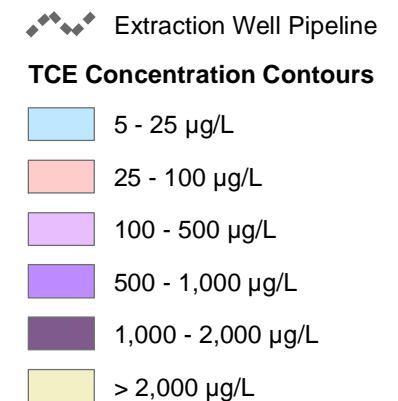




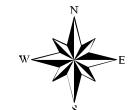
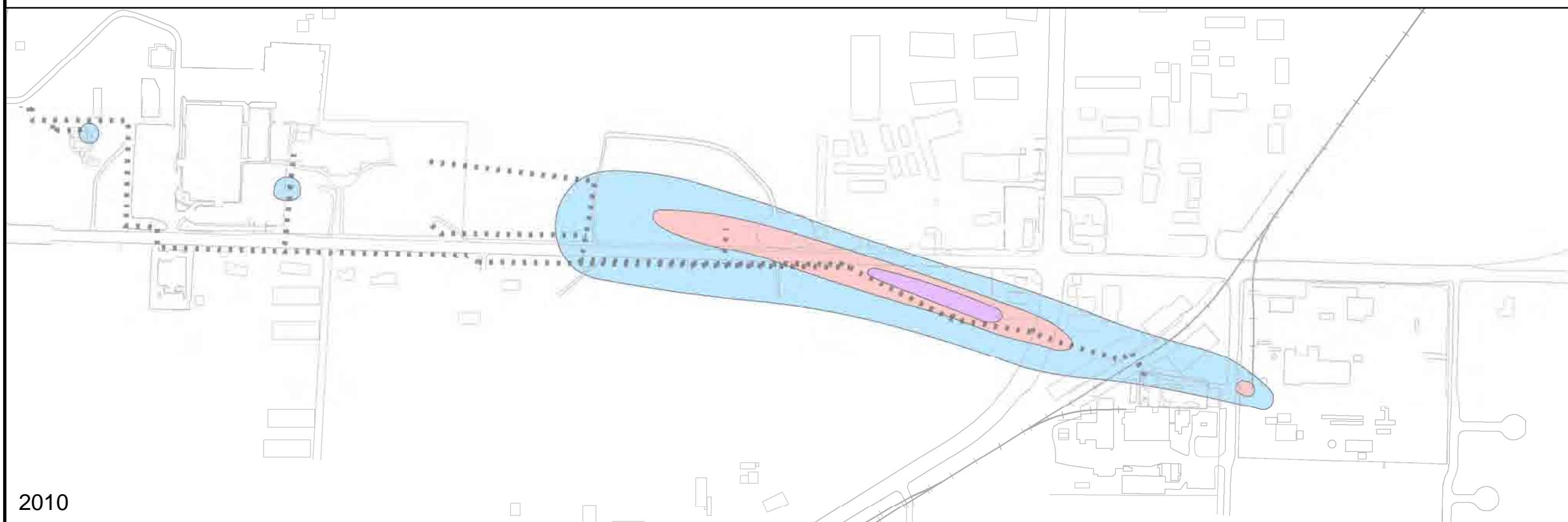




Legend



1995



Note:  
Contours represent evaluation of  
probable conditions based on  
presently available data. Some  
variations from these conditions  
must be expected.

0 200 400 800  
Feet

2010



PROJECT MGR: CMB	DESIGNED BY: BSM	DATE: FEBRUARY 2011	FILE No.: H:\projects\1449505\FALL2010MXD\ Annual Report\TCE_1995vs2010
CHECKED BY: GAH	DRAWN BY: JPK	PROJECT No.: 14495.05	SCALE: AS SHOWN, SAME IN BOTH FRAMES

BOOMSNUB/AIRCO SUPERFUND SITE  
HAZEL DELL, WASHINGTON

FIGURE 14  
TCE PLUME MAP  
1995 vs. 2010

## **TABLES**

TABLE 1. OU-2 TCE SOURCE WELL SAMPLING RESULTS

Well ID	Baseline*	Spring 2009	Fall 2009	Spring 2010	Fall 2010
AMW-1A	<b>220</b>	0.32 J	<b>12</b>	0.95	2.8
AMW-1B	0.73	0.49 J	0.51	--	0.45 J
<b>AMW-2A</b>	<b>1,000</b>	<b>83</b>	<b>60</b>	<b>91</b>	<b>29</b>
AMW-2B	0.40 J	0.65	0.53	--	0.49 J
AMW-3A	<b>8.0</b>	0.66	0.68	0.75	0.85
<b>AMW-12A</b>	<b>1,200</b>	<b>21</b>	<b>24</b>	<b>31</b>	<b>29</b>
AMW-13A	2.7	0.94	0.58	0.50 U	0.50 U
AMW-19A	<b>290</b>	1.9	1.7	1.2	1.7
AMW-26	<b>34</b>	0.33 J	2.3	--	0.24 J
AMW-52A	0.53	0.08 J	0.50 U	--	0.16 J
<b>AMW-53A</b>	<b>240</b>	3.1	<b>14</b>	<b>10</b>	<b>11</b>
AMW-54A	<b>120</b>	2.2	2.5	1.9	2.3
AMW-55A	<b>22</b>	0.82	0.97	--	0.95
AMW-56A	<b>610</b>	0.47 J	0.41 J	--	2.3
<b>MW-1A</b>	<b>880</b>	<b>10</b>	<b>10</b>	<b>11</b>	<b>7.9</b>

## NOTES:

J = The result is an estimated concentration that is less than the Method Reporting Limit but greater than the Method Detection Limit.

-- = Not Sampled.

U = The analyte was not detected above the specified reporting limit.

\* = Baseline samples for wells installed as part of the removal action were collected in December 2003.

Baseline data from existing wells was collected during the October 2003 semiannual sampling event.

When duplicate samples are collected, the maximum of the two results is reported.

Results in red indicate the concentration exceeds the cleanup level of 5.0 µg/L.

Monitoring wells shown in red had concentrations above the cleanup level of 5.0 µg/L during the reporting period. All results reported in micrograms per liter (µg/L).

TABLE 2. 2010 EXTRACTION WELL PUMPING RATES

Well ID	Flow Rates (gpm)											
	January	February	March	April	May	June	July	August	September	October	November	December
AMW-27	1	1	1.0	1	1	1	1.0	1	1	1	1	1
AMW-42	off	off	off	off	off	off	off	off	off	off	off	off
MW-6B	7.5	7.6	7.6	7.6	7.6	7.6	7.6	7.5	7.5	7.5	7.3	7
MW-10B	7.3	7.4	7.4	7.4	7.4	7.4	7.5	8	8.3	8.8	8.5	8.5
MW-10C	8.6	8.6	8.6	8.6	8.7	8.8	8.8	9	9.2	9	9	8.9
MW-14C	12	12	12.0	12	12	12	12.0	11.8	11.8	12	12	12
MW-14E	7	7	7.0	7	7	7	7.0	7	5.5	5.4	5.4	5.4
MW-18D	7.6	7.7	7.7	7.7	7.7	7.7	8.0	7.8	7.8	12.4	12.4	12.5
MW-19D	12.7	12.8	12.4	12.4	12	12	13.0	12	11.5	11.3	11.3	11.3
MW-20D	15.4	15.3	15.4	15.3	15.3	15	15.7	15.3	15.3	15.6	15	15.1
MW-21D	10.5	10.1	10.6	10.4	10.4	10.5	10.8	10.3	10.4	9.9	9.3	9.3
MW-22D	11.1	11	11.0	11.6	10.8	11.2	12.1	10.3	10.4	11.4	11.2	11.5
MW-25D	11	11.5	11.4	11.4	11.4	11.4	12.0	11.2	11.2	11	11	11
MW-26D	12.5	12.5	12.0	12.4	12.5	12.8	14.0	12.5	11.6	12.5	11	11
MW-27D	off	off	off	off	off	off	off	off	off	off	off	off
MW-31	off	off	off	off	off	off	off	off	off	off	off	off
MW-37	off	off	off	off	off	off	off	off	off	off	off	off
MW-48	off	off	off	off	off	off	off	off	off	off	off	off
MW-49	9.2	9.1	9.6	9	9	10	off	13.2	13.9	12.8	13	13
PW-1B	9	9	9.0	9.2	9.2	9.2	9.2	9.2	9.2	10	7	6.4
CPU-13	13.1	13.2	13.2	13.2	12.9	13.3	13.4	13.5	13	13	13.1	13
<b>Total</b>	155.5	155.8	155.9	156.2	154.9	156.9	152.1	159.6	157.6	163.6	157.5	156.9

Note: gpm = gallons per minute

TABLE 3. WELLS AND RECOMMENDED SAMPLING FREQUENCIES

Well Name	Well Type	GW Model Layer	Top of Screen		Bottom of Screen		TCE					Chromium					MAROS Recommended Sampling Frequency	2010 Sampling Frequency <sup>1</sup>		2011 Recommendations		Rationale for Frequency <sup>2</sup>			
			Depth	Elevation	Depth	Elevation	Min. Conc. (ug/L)	Max. Conc. (ug/L)	Most Recent Conc. (ug/L)	Most Recent Data Qualifiers	Most Recent Sample Date	Conc. Statistically Below Cleanup Levels	Min. Conc. (ug/L)	Max. Conc. (ug/L)	Most Recent Conc. (ug/L)	Most Recent Data Qualifiers	Most Recent Sample Date	Conc. Statistically Below Cleanup Levels	TCE	Chromium	TCE	Chromium			
<b>Troutdale Wells</b>																									
AMW-24	M/D	6	190	74.72	200	64.72	9.00	25.0	13.0		10/12/2010	NA	U	6.20	2.7	J	10/12/2010	NA	NA	NA	Annual	Annual	NC	NC	Troutdale well - TCE impacted
AMW-25	M/D	6	215	67.94	225	57.94	U	U	U	U	10/12/2010	NA	U	4.10	1.9	J	10/12/2010	NA	NA	NA	Biennial	Biennial	NC	NC	Troutdale well - unimpacted; upgradient well
AMW-50	M/D	6	185.19	97.59	195.19	87.59	U	0.16	U	U	10/12/2010	NA	U	37.7	1.80	J	10/12/2010	NA	NA	NA	Biennial	Biennial	NC	NC	Troutdale well - unimpacted
AMW-51	M/D	6	185.7	72.74	195.7	62.74	U	0.32	0.17	J	10/12/2010	NA	U	10.1	4.30	J	10/12/2010	NA	NA	NA	Biennial	Biennial	NC	NC	Troutdale well - unimpacted
AMW-62	M/D	6	185.73	72.93	195.73	62.93	U	U	U	U	10/13/2010	NA	U	U	U	U	10/13/2010	NA	NA	NA	Biennial	Biennial	NC	NC	Troutdale well - unimpacted
CPU-2	M	6	186.13	73.4	196.13	63.4	U	U	U	U	10/13/2010	NA	U	14.0	2.4	J	10/13/2010	NA	NA	NA	Biennial	Biennial	NC	NC	Troutdale well - unimpacted
CPU-3D	M/D	6	212.38	34.39	217.38	29.39	U	U	U	U	10/13/2010	NA	U	11.0	3.10	J	10/13/2010	NA	NA	NA	Biennial	Biennial	NC	NC	Troutdale well - unimpacted
CPU-10	M	6	186.9	74.34	196.9	64.34	U	U	U	U	10/14/2010	NA	U	U	U	U	10/14/2010	NA	NA	NA	Biennial	Biennial	NC	NC	Troutdale well - unimpacted
MW-33	M/D	6	205	67.55	215	57.55	6.40	19.0	14.0		10/12/2010	NA	U	15	3.3	J	10/12/2010	NA	NA	NA	Annual	Annual	NC	NC	Troutdale well - TCE impacted
MW-34	M/D	6	195	72.33	205	62.33	U	U	U	U	10/13/2010	NA	U	25.4	U	U	10/13/2010	NA	NA	NA	Biennial	Biennial	NC	NC	Troutdale well - unimpacted
BENNETT	Other	N/A	N/A	N/A	180	N/A	5.10	10.0	8.6		10/13/2010	NA	U	U	U	U	10/13/2010	NA	NA	NA	Semiannual	Semiannual	NC	NC	Troutdale well - TCE impacted -CPU request for semiannual sampling
<b>Upgradient Wells</b>																									
AMW-6A	M/D	1	24	260.56	34	250.56	U	0.93	0.46	J	10/12/2010	Yes	U	17.7	5.00		10/12/2010	Yes	NFS	NFS	Biennial	Biennial	NC	NC	Infiltration gallery well
AMW-7A	M/D	1	24.25	260.77	34.25	250.77	U	1.00	0.43	J	10/12/2010	Yes	U	5.20	3.10	J	10/12/2010	Yes	NFS	NFS	Biennial	Biennial	NC	NC	Infiltration gallery well
AMW-8A	M	1	24.5	260.99	34.5	250.99	0.79	692	0.79		10/20/2010	No							Annual	Annual			NC		Upgradient well - check for possible offsite TCE impacts
AMW-10A	M/D	1	21.5	262.51	31.5	252.51	U	0.79	0.18	J	10/12/2010	Yes	U	12.5	10.10		10/12/2010	Yes	NFS	NFS	Biennial	Biennial	NC	NC	Infiltration gallery well
AMW-11A	M/D	1	24	259.21	34	249.21	U	1.50	0.45	J	10/12/2010	Yes	U	9.40	4.00	J	10/12/2010	Yes	NFS	NFS	Biennial	Biennial	NC	NC	Infiltration gallery well
<b>TCE Source Wells</b>																									
AMW-1A	M	1	24.24	259.85	34.24	249.85	U	1290	2.8		10/18/2010	No							Annual		Semiannual		NC		OU2 monitoring plan; well cluster - most impacted (TCE fluctuating above and below cleanup level)
AMW-1B	M	1	46.49	237.62	56.49	227.62	U	82.2	0.45	J	10/18/2010	No							Annual		Biennial		NFS		Well cluster. TCE has been below the cleanup level since 1999.
AMW-2A	M	1	24.2	259.83	34.2	249.83	1.1	5350	29.0		10/18/2010	No							Annual		Semiannual		NC		OU2 monitoring plan; well cluster - most impacted (TCE above cleanup level)
AMW-2B	M	1/2	47	237.11	57	227.11	U	30.8	0.49	J	10/18/2010	No							Annual		Biennial		NC		OU2 monitoring plan; well cluster - less frequent sampling
AMW-3A	M	1	24.5	259.42	34.5	249.42	0.16	34.0	0.85		10/20/2010	No						Annual		Annual		Biennial		OU2 monitoring plan (TCE below cleanup level)	
<b>AMW-12A</b>	<b>M</b>	<b>1</b>	<b>24.05</b>	<b>259.69</b>	<b>34.05</b>	<b>249.69</b>	<b>19.0</b>	<b>19300</b>	<b>29</b>		<b>10/18/2010</b>	<b>No</b>						<b>Annual</b>		<b>Semi-annual</b>		<b>NC</b>		<b>OU2 monitoring plan; more frequent sampling (TCE above cleanup level)</b>	
AMW-13A	M	1	23.8	260.08	33.8	250.08	U	74.8	U	U	10/18/2010	No						Annual		Annual		Biennial		OU2 monitoring plan (TCE below cleanup level)	
AMW-19A	M	1	25	258.94	35	248.94	1.20	490	1.70		10/20/2010	No						Annual		Annual		NC		OU2 monitoring plan (TCE below cleanup level)	
AMW-26	M	1	24.2	258.82	34.2	248.82	U	100	0.24	J	10/18/2010	No						Annual		Annual		Biennial		TCE source area (TCE below cleanup level)	
AMW-52A	M	1	24.55	255.85	34.55	245.85	U	29.0	0.16	J	10/18/2010	No						Annual		Annual		Biennial		OU2 monitoring plan (TCE below cleanup level)	
AMW-53A	M	1	22.2	258.85	32.2	248.85	1.20	240	11.0		10/18/2010	No						Annual		Semiannual		NC		OU2 monitoring plan (TCE above cleanup level)	
AMW-54A	M	1	24.3	259.01	34.3	249.01	0.53	190	2.30		10/18/2010	No						Annual		Annual		Biennial		OU2 monitoring plan (TCE below cleanup level)	
AMW-55A	M	1	20.83	261.28	30.83	251.28	0.40	39.0	0.95		10/18/2010	No					</								

TABLE 3. WELLS AND RECOMMENDED SAMPLING FREQUENCIES

Well Name	Well Type	GW Model Layer	Top of Screen		Bottom of Screen		TCE						Chromium						MAROS Recommended Sampling Frequency		2010 Sampling Frequency <sup>1</sup>		2011 Recommendations		Rationale for Frequency <sup>2</sup>
			Depth	Elevation	Depth	Elevation	Min. Conc. (ug/L)	Max. Conc. (ug/L)	Most Recent Conc. (ug/L)	Most Recent Data Qualifiers	Most Recent Sample Date	Conc. Statistically Below Cleanup Levels	Min. Conc. (ug/L)	Max. Conc. (ug/L)	Most Recent Conc. (ug/L)	Most Recent Data Qualifiers	Most Recent Sample Date	Conc. Statistically Below Cleanup Levels	TCE	Chromium	TCE	Chromium	TCE	Chromium	
MW-4A	M	1	26.81	253.49	36.81	243.49	0.80	210	5.50		10/20/2009	No	363	5320	625		10/18/2010	No	Annual	Annual	Every 5 years	Annual	NFS	NC	Well cluster - not optimal depth for TCE (EPA request for annual Cr sampling)
MW-4B	M	1	39.7	240.45	44.7	235.45	0.94	600	5.90		10/18/2010	No	353	15500	616		10/18/2010	No	Annual	Annual	Biennial	Annual	NC	NC	Well cluster - most impacted and Cr hotspot (EPA request for annual Cr sampling)
MW-4BShed	M	1	52.9	227.57	57.9	222.57	4.10	198	4.10		10/20/2009	No	85.9	8580	85.9		10/20/2009	No	Annual	Annual	Every 5 years	Every 5 years	NFS	NFS	Well cluster - not optimal depth
MW-6A	M	1	18.25	260.52	28.25	250.52	U	38.1	U	U	10/15/2009	No	U	167	167		10/15/2009	No	NA	Quarterly	NFS (2009)	Every 5 years	NC	NC	Well cluster - TCE below cleanup level since 1995.
<b>MW-6B</b>	E	<b>1</b>	<b>45.75</b>	<b>227.57</b>	<b>55.75</b>	<b>217.57</b>	<b>4.70</b>	<b>1230</b>	<b>4.70</b>		<b>10/11/2010</b>	<b>No</b>	<b>10.9</b>	<b>13000</b>	<b>28.2</b>		<b>10/11/2010</b>	<b>No</b>	<b>Annual</b>	<b>Annual</b>	<b>Semi-annual</b>	<b>Semi-annual</b>	<b>NC</b>	<b>NC</b>	Extraction well - active (also well cluster)
MW-6C	M	2	71.55	207.1	81.55	197.1	0.54	66.7	0.54		10/19/2009	No	U	400	U	UJ	10/19/2009	No	Annual	NA	Every 5 years	NFS (2009)	NFS	NC	Well cluster - not optimum depth; Cr below cleanup level since 1995
MW-6D	M	3/4	100.45	178.45	110.45	168.45	4.30	63.5	4.30		10/19/2009	No	U	29.8	29.8		10/19/2009	Yes	Annual	NA	Every 5 years	NFS (2009)	NFS	NC	Well cluster - not optimum depth; Chromium statistically below cleanup level
MW-7B	M	1	47	233.02	57	223.02	7.30	984	7.30		10/19/2009	No	U	932	U	UJ	10/19/2009	No	Annual	NA	Every 5 years	NFS (2009)	NC	NC	Well cluster - adjacent to MW-4 cluster, less frequent sampling; Cr below cleanup level since 1998
MW-8B	M	1	46.9	233.8	56.9	223.8	3.30	3070	3.30		10/20/2010	No	U	13.0	7.30		10/29/2008	Yes	Annual	NA	Biennial	NFS (2009)	NC	NC	Plume area - not included in any other category; Cr statistically below cleanup level
MW-9B	M	1	44.9	230.52	54.9	220.52	5.70	2100	5.70		10/20/2010	No	U	429	3.60	J	10/29/2008	No	Annual	NA	Biennial	NFS (2009)	NC	NC	Well cluster - most TCE impacted; Cr below cleanup level since 1997
MW-9C	M	1	65	210.44	75	200.44	3.80	2280	3.80		10/19/2009	No	U	65.4	65.4		10/19/2009	No	Annual	Annual	Every 5 years	Every 5 years	NFS	NFS	Well cluster - not optimum depth
MW-10B	E	1	48	225.24	58	215.24	7.50	1300	18.0		10/11/2010	No	31.0	3600	45.2		10/11/2010	No	Annual	Annual	Semiannual	Semiannual	NC	NC	Extraction well - active (also well cluster)
<b>MW-10C</b>	E	<b>1</b>	<b>70</b>	<b>203.25</b>	<b>80</b>	<b>193.25</b>	<b>3.50</b>	<b>1500</b>	<b>3.60</b>		<b>10/11/2010</b>	<b>No</b>	<b>67.2</b>	<b>6400</b>	<b>67.2</b>		<b>10/11/2010</b>	<b>No</b>	<b>Annual</b>	<b>Annual</b>	<b>Semi-annual</b>	<b>Semi-annual</b>	<b>NC</b>	<b>NC</b>	Extraction well - active (also well cluster)
MW-12C	M	1	71.2	203.11	81.2	193.11	7.40	9430	24.0		10/15/2010	No	U	19.0	U	U	10/15/2010	Yes	Annual	NFS	Biennial	Biennial	NC	NFS	TCE Plume boundary; Cr statistically below cleanup level, TCE above cleanup level
MW-13C	M	1	65.03	206.94	75.03	196.94	2.10	35.0	5.70		10/15/2010	No	27.5	122	27.5		10/15/2010	Yes	Annual	NFS	Biennial	Biennial	NC	NFS	TCE Plume boundary; Cr statistically below cleanup level, TCE fluctuates above and below cleanup level
<b>PW-1B</b>	E	<b>1</b>	<b>48</b>	<b>228.56</b>	<b>58</b>	<b>218.56</b>	<b>2.80</b>	<b>900</b>	<b>2.80</b>		<b>10/11/2010</b>	<b>No</b>	<b>40.8</b>	<b>13000</b>	<b>52.9</b>		<b>10/11/2010</b>	<b>No</b>	<b>Annual</b>	<b>Annual</b>	<b>Semi-annual</b>	<b>Semi-annual</b>	<b>NC</b>	<b>NC</b>	Extraction well - active
<b>Intermediate Wells</b>																									
AMW-16	M	2	76.83	185.15	86.83	175.15	1.70	87.0	1.70		10/14/2010	No	U	3.00	2.8	J	10/14/2010	Yes	Annual	NFS	Annual	Biennial	NC	NFS	TCE Plume boundary; Cr statistically below cleanup level
AMW-17	M/D	1	81	180.87	91	170.87	1.10	66.9	28.00		10/13/2010	No	U	4.60	U	U	10/14/2009	Yes	Annual	NA	Semiannual	NFS (2008)	NC	NC	Northern Plume investigation area; Cr statistically below the cleanup level
AMW-18	M	1	92.69	186.15	102.69	176.15	U	460	130		10/20/2010	No	U	2.40	U	U	10/10/2007	Yes	Quarterly	NA	Semiannual	NFS (2008)	NC	NC	Northern Plume investigation area; Cr statistically below the cleanup level
AMW-59	M/D	3	134.74	134.6295	139.74	129.6295	76.0	310	76	D	10/13/2010	No	U	7.90	U	U	10/14/2009	Yes	Annual	NA	Annual	NFS (2009)	Biennial	NC	Plume area - silt well; Cr statistically below the cleanup level
CPU-14	M	2	60.43	197.13	70.43	187.13	4.90	63.0	7.7		10/20/2010	No	31.9	957	52.9		10/20/2010	No	Annual	Annual	Annual	Annual	NC	NC	Plume boundary
MW-14C	E	1	70	201.22	80	191.22	20.0	2500	22.0		10/11/2010	No	94.4	20000	94.7		10/11/2010	No	Annual	Annual	Semiannual	Semiannual	NC	NC	Extraction well - active (also well cluster)
<b>MW-14E</b>	E	<b>2</b>	<b>115</b>	<b>153.95</b>	<b>125</b>	<b>143.95</b>	<b>73.0</b>	<b>6540</b>	<b>76.0</b>	<b>D</b>	<b>10/11/2010</b>	<b>No</b>	<b>49.6</b>	<b>21200</b>	<b>54.7</b>		<b>10/11/2010</b>	<b>No</b>	<b>Annual</b>	<b>Annual</b>	<b>Semi-annual</b>	<b>Semi-annual</b>	<b>NC</b>	<b>NC</b>	Extraction well - active (also well cluster)
MW-15E	M	3	95.7	168.97	105.7	158.97	6.00	1100	6.00		10/20/2010	No	U	18.0	3.30	J	10/29/2008	Yes	Annual	NA	Semiannual	NFS (2008)	NC</		

TABLE 3. WELLS AND RECOMMENDED SAMPLING FREQUENCIES

Well Name	Well Type	GW Model Layer	Top of Screen		Bottom of Screen		TCE					Chromium					MAROS Recommended Sampling Frequency		2010 Sampling Frequency <sup>1</sup>		2011 Recommendations		Rationale for Frequency <sup>2</sup>		
			Depth	Elevation	Depth	Elevation	Min. Conc. (ug/L)	Max. Conc. (ug/L)	Most Recent Conc. (ug/L)	Most Recent Data Qualifiers	Most Recent Sample Date	Cone. Statistically Below Cleanup Levels	Min. Conc. (ug/L)	Max. Conc. (ug/L)	Most Recent Conc. (ug/L)	Most Recent Data Qualifiers	Most Recent Sample Date	Cone. Statistically Below Cleanup Levels							
PZ-39	M	2	88	176.37	90	174.37	99.0	2,100 J	99.0		10/20/2009	No	6.70	11.0	6.70	UJ	10/20/2009	No	NA	NA	Biennial	Biennial	NC	NFS	Plume area - not included in any other category - TCE impacted
<b>Church of God Wells</b>																									
AMW-14	M	2	58.19	215.7089	68.19	205.7089	U	506	U	UJ	10/19/2010	No	55	8300	55.0		10/19/2010	No	Annual	Annual	Semiannual	Semiannual	Annual	Annual	Plume area - not included in any other category
AMW-27	E	3	78	194.6	88	184.6	16.0	81.0	16.0		10/12/2010	No	49.3	7160	49.3		10/12/2010	No	Annual	Annual	Semiannual	Semiannual	NC	NC	Extraction well - active
AMW-61	M	3	91.86	181.92	96.86	176.92	6.00	43.0	6.00		10/20/2010	No	17.3	1410	35.2		10/20/2010	No	Annual	Annual	Biennial	Biennial	NC	NFS	Plume area - silt well (Cr below cleanup level)
CPU-12	M	2	61.12	214.11	71.12	204.11	U	13.0	2.80		10/14/2010	No	U	245	U	U	10/14/2010	No	Annual	Annual	Biennial	NC	NFS	TCE Plume boundary	
CPU-13	E	3	80	198.9898	90	188.9898	1.60	110	1.60		10/12/2010	No	19.7	5000	20.1		10/12/2010	No	Annual	Annual	Semiannual	Semiannual	NC	NC	Extraction well - active
<b>MW-21D</b>	<b>E</b>	<b>2</b>	<b>56</b>	<b>201.56</b>	<b>66</b>	<b>191.56</b>	<b>7.0</b>	<b>3000</b>	<b>7.0</b>		<b>10/11/2010</b>	<b>No</b>	16.0	35000	16.1		10/11/2010	<b>No</b>	<b>Annual</b>	<b>Annual</b>	<b>Semi-annual</b>	<b>Semi-annual</b>	<b>NC</b>	<b>NC</b>	<b>Extraction well - active</b>
MW-22D	E	3	54	215.02	64	205.02	7.9	390	8.0		10/11/2010	No	49.9	11000	50.6		10/11/2010	No	Annual	Annual	Semiannual	Semiannual	NC	NC	Extraction well - active
MW-23D	M	3	75.86	191.7004	90.86	176.7004	U	67.0	1.90		10/14/2010	No	U	6.70	4.10	J	10/14/2010	Yes	Annual	NFS	Annual	Biennial	NC	NFS	TCE Plume boundary; Cr statistically below cleanup level
MW-25D	E	2	70	202.13	80	192.13	1.20	200	1.30		10/12/2010	No	U	16000	3.70	J	10/12/2010	No	Annual	Annual	Quarterly	Quarterly	Semiannual	Semiannual	Extraction well - active
<b>MW-26D</b>	<b>E</b>	<b>3</b>	<b>83</b>	<b>189.86</b>	<b>93</b>	<b>179.86</b>	<b>U</b>	<b>52</b>	<b>0.78</b>		<b>10/12/2010</b>	<b>No</b>	<b>12</b>	<b>4800</b>	<b>12.1</b>		<b>10/12/2010</b>	<b>No</b>	<b>Annual</b>	<b>Annual</b>	<b>Semi-annual</b>	<b>Semi-annual</b>	<b>NC</b>	<b>NC</b>	<b>Extraction well - active</b>
<b>MW-27D</b>	<b>E</b>	<b>2</b>	<b>61.1</b>	<b>208.15</b>	<b>71.1</b>	<b>198.147</b>	<b>U</b>	<b>280</b>	<b>0.63</b>		<b>10/12/2010</b>	<b>No</b>	<b>3.90</b>	<b>6940</b>	<b>8.60</b>		<b>10/12/2010</b>	<b>No</b>	<b>Annual</b>	<b>Annual</b>	<b>Quarterly</b>	<b>Quarterly</b>	<b>Annual</b>	<b>Annual</b>	<b>Extraction well - inactive</b>
MW-49	E	2	71.2	200.48	81.2	190.48	U	28	1.8		10/12/2010	No	U	1160	17.4		10/12/2010	No	Annual	Annual	Semiannual	Semiannual	NC	NC	Extraction well - active
<b>Other Toe Wells</b>																									
AMW-42	E	3	87	168.8803	102	153.8803	U	73.0	0.88		10/11/2010	No	U	2280	18.2		10/11/2010	No	Annual	Annual	Annual	Annual	Biennial	Biennial	Sentinel well downgradient of MW-35 - TCE and Cr are below the cleanup level
AMW-63	M	2	76.13	181.29	86.13	171.29	U	0.17	U	U	10/14/2010	Yes	U	12.4	6.8		10/14/2010	Yes	NFS	NFS	Annual	Annual	NFS	NFS	Was TOPPS monitoring well; TCE and Cr are statistically below cleanup level
<b>MW-31</b>	<b>E</b>	<b>2</b>	<b>75</b>	<b>187.88</b>	<b>85</b>	<b>177.88</b>	<b>0.20</b>	<b>32</b>	<b>0.20</b>	J	<b>10/11/2010</b>	<b>No</b>	<b>U</b>	<b>535</b>	<b>8.10</b>		<b>10/11/2010</b>	<b>No</b>	<b>Annual</b>	<b>Annual</b>	<b>Biennial</b>	<b>Biennial</b>	<b>NC</b>	<b>NC</b>	<b>Attainment well</b>
MW-35	E/M	2	79.5	176.2018	89.5	166.2018	U	80	6.30		10/19/2010	No	U	4690	28.8		10/19/2010	No	Annual	Annual	Annual	Annual	NC	NC	Former extraction well - inactive - local TCE hot spot
<b>MW-41</b>	<b>E/M</b>	<b>2</b>	<b>74</b>	<b>179.08</b>	<b>84</b>	<b>169.085</b>	<b>U</b>	<b>8.3</b>	<b>U</b>	<b>U</b>	<b>10/14/2010</b>	<b>No</b>	<b>U</b>	<b>216</b>	<b>U</b>	<b>U</b>	<b>10/14/2010</b>	<b>No</b>	<b>Annual</b>	<b>Annual</b>	<b>Annual</b>	<b>Annual</b>	<b>NC</b>	<b>NC</b>	<b>TOPPS monitoring and attainment well</b>
<b>NOTES:</b>																									
<sup>1</sup> The 2010 sampling frequencies shown are those approved by EPA as of 12/31/10.																									
<sup>2</sup> For wells with 2011 recommendations for a change in sampling frequency, additional explanation is provided in Table C-3.																									
<b>Bolded well</b> = attainment well <b>Cr</b> = chromium <b>E</b> = extraction well <b>E/M</b> = extraction well with pump pulled; now sampled as a monitoring well <b>GW</b> = groundwater <b>M</b> = monitoring well <b>MAROS</b> = Monitoring and Remediation Optimization System <b>M/D</b> = monitoring well with dedicated pump installed <b>NA</b> = not applicable <b>NFS</b> = no further sampling (dates in parentheses indicate the Annual Report in which this recommendation was first made) <b>NC</b> = no change to the current sampling frequency <b>TCE</b> = trichloroethene <b>TOPPS</b> = toe of plume pilot study <b>U</b> = undetected <b>ug/L</b> = micrograms per liter																									
Data used for the Annual Screening are from 1995 to the present. Biennial sampling - these wells will be sampled next in Fall 2012. Every 5 years - these wells will be sampled next in Fall 2014. Wells designated NFS in previous Annual Reports have been deleted from this table and are included in Table C-2.																									

TABLE 4. SUMMARY OF RECOMMENDED WELL SAMPLING FREQUENCIES FOR 2011

Well Name	Recommendation						Rationale for Recommendation
	Well Type	Quarterly	Semi-annual	Annual	Biennial	Every 5 Years	
<b>Troutdale wells</b>							
AMW-24	M/D			X			Troutdale well - TCE impacted
AMW-25	M/D				X		Troutdale well - unimpacted; upgradient well
AMW-50	M/D				X		Troutdale well - unimpacted
AMW-51	M/D				X		Troutdale well - unimpacted
AMW-62	M/D				X		Troutdale well - unimpacted
CPU-2	M				X		Troutdale well - unimpacted
CPU-3D	M/D				X		Troutdale well - unimpacted
CPU-10	M				X		Troutdale well - unimpacted
MW-33	M/D			X			Troutdale well - TCE impacted
MW-34	M/D				X		Troutdale well - unimpacted
BENNETT	Other		X				Troutdale well - TCE impacted -CPU request for semiannual sampling
<b>Upgradient Wells</b>							
AMW-6A	M/D				X		Infiltration gallery well
AMW-7A	M/D				X		Infiltration gallery well
AMW-8A	M		TCE				Upgradient well - check for possible offsite TCE impacts
AMW-10A	M/D				X		Infiltration gallery well
AMW-11A	M/D				X		Infiltration gallery well
<b>TCE Source Wells</b>							
AMW-1A	M		TCE				OU2 monitoring plan; well cluster - most impacted (TCE fluctuating above and below cleanup level)
AMW-2A	M		TCE				OU2 monitoring plan; well cluster - most impacted (TCE above cleanup level)
AMW-2B	M			TCE			OU2 monitoring plan; well cluster - less frequent sampling
AMW-3A	M			TCE			OU2 monitoring plan (TCE below cleanup level)
AMW-12A	M		TCE				OU2 monitoring plan; more frequent sampling (TCE above cleanup level)
AMW-13A	M			TCE			OU2 monitoring plan (TCE below cleanup level)
AMW-19A	M			TCE			OU2 monitoring plan (TCE below cleanup level)
AMW-26	M			TCE			TCE source area (TCE below cleanup level)
AMW-52A	M			TCE			OU2 monitoring plan (TCE below cleanup level)
AMW-53A	M		TCE				OU2 monitoring plan (TCE above cleanup level)
AMW-54A	M			TCE			OU2 monitoring plan (TCE below cleanup level)
AMW-55A	M			TCE			OU2 monitoring plan (TCE below cleanup level)
AMW-56A	M			TCE			OU2 monitoring plan (TCE below cleanup level)
MW-1A	M		TCE		Cr		OU2 monitoring plan (TCE fluctuating above and below cleanup level) also Cr background well

TABLE 4. SUMMARY OF RECOMMENDED WELL SAMPLING FREQUENCIES FOR 2011

Well Name	Recommendation						Rationale for Recommendation
	Well Type	Quarterly	Semi-annual	Annual	Biennial	Every 5 Years	
<b>Proximal Wells</b>							
AMW-58	M				TCE		Plume area - silt well; Cr statistically below the cleanup level
MW-2A	M			Cr	TCE		Well cluster - most impacted and Cr hotspot
MW-3A	M			Cr			Well cluster - most Cr impacted; TCE statistically below cleanup level
MW-4A	M			Cr			Well cluster - not optimal depth for TCE (EPA request for annual Cr sampling)
MW-4B	M			Cr	TCE		Well cluster - most impacted and Cr hotspot (EPA request for annual Cr sampling)
MW-6A	M					Cr	Well cluster - TCE below cleanup level since 1995.
MW-6B	E		X				Extraction well - active (also well cluster)
MW-7B	M					TCE	Well cluster - adjacent to MW-4 cluster, less frequent sampling; Cr below cleanup level since 1998
MW-8B	M				TCE		Plume area - not included in any other category; Cr statistically below cleanup level
MW-9B	M				TCE		Well cluster - most TCE impacted; Cr below cleanup level since 1997
MW-10B	E		X				Extraction well - active (also well cluster)
MW-10C	E		X				Extraction well - active (also well cluster)
MW-12C	M				TCE		TCE Plume boundary; Cr statistically below cleanup level, TCE above cleanup level
MW-13C	M				TCE		TCE Plume boundary; Cr statistically below cleanup level, TCE fluctuates above and below cleanup level
PW-1B	E		X				Extraction well - active
<b>Intermediate Wells</b>							
AMW-16	M			TCE			TCE Plume boundary; Cr statistically below cleanup level
AMW-17	M/D		TCE				Northern Plume investigation area; Cr statistically below the cleanup level
AMW-18	M		TCE				Northern Plume investigation area; Cr statistically below the cleanup level
AMW-59	M/D(E)				TCE		Plume area - silt well; Cr statistically below the cleanup level
CPU-14	M			X			Plume boundary
MW-14C	E		X				Extraction well - active (also well cluster)
MW-14E	E		X				Extraction well - active (also well cluster)
MW-15E	M		TCE				Northern Plume investigation area; Cr statistically below the cleanup level
MW-16E	M			TCE			TCE Plume boundary; Cr statistically below cleanup level
MW-18D	E		X				Extraction well - active (also well cluster)
MW-18E	M			TCE			Plume area - TCE hotspot
MW-19D	E		X				Extraction well - active
MW-20D	E		X				Extraction well - active
PZ-39	M				TCE		Plume area - not included in any other category - TCE impacted

TABLE 4. SUMMARY OF RECOMMENDED WELL SAMPLING FREQUENCIES FOR 2011

Well Name	Recommendation						Rationale for Recommendation
	Well Type	Quarterly	Semi-annual	Annual	Biennial	Every 5 Years	
<b>Church of God Wells</b>							
AMW-14	M			X			Plume area - not included in any other category
AMW-27	E		X				Extraction well - active
AMW-61	M			TCE			Plume area - silt well (Cr below cleanup level)
CPU-12	M			TCE			TCE Plume boundary
CPU-13	E		X				Extraction well - active
MW-21D	E		X				Extraction well - active
MW-22D	E		X				Extraction well - active
MW-23D	M			TCE			TCE Plume boundary; Cr statistically below cleanup level
MW-25D	E		X				Extraction well - active
MW-26D	E		X				Extraction well - active
MW-27D	E			X			Extraction well - inactive
MW-49	E		X				Extraction well - active
<b>Other Toe Wells</b>							
AMW-42	E				X		Sentinel well downgradient of MW-35 - TCE and Cr are below the cleanup level
MW-31	E				X		Attainment well
MW-35	E/M			X			Former extraction well - inactive - local TCE hot spot
MW-41	E/M			X			TOPPS monitoring and attainment well
<b>Total</b>							
<b>Total Wells:</b>	25	17	34	2			78
Actual total wells listed = 75							
(3 wells are in 2 categories; i.e., TCE and Cr are on different sampling schedules)							

**NOTES:**

Wells designated NFS in previous Annual Reports have been deleted from this table and are included in Table 11.

Cr = Chromium

TCE = Trichloroethene

X = TCE and Chromium

TABLE 5. ATTAINMENT WELLS

Well Name	TCE					Chromium				
	Min. Conc. (ug/L)	Max. Conc. (ug/L)	Most Recent Conc. (ug/L)	Date of Most Recent Sample	Concentrations Statistically Below Cleanup Levels/Attained	Min. Conc. (ug/L)	Max. Conc. (ug/L)	Most Recent Conc. (ug/L)	Date of Most Recent Sample	Concentrations Statistically Below Cleanup Levels/Attained
<b>TCE Source Wells</b>										
AMW-12A	19.0	19300	29.0	10/18/2010	No	NA	NA	NA	NA	NA
MW-1A	7.40	3900	7.90	10/18/2010	No	NA	NA	NA	NA	NA
<b>Proximal Wells</b>										
MW-6B	4.70	1230	4.70	10/11/2010	No	10.9	13000	28.2	10/11/2010	No
MW-10C	3.50	1500	3.60	10/11/2010	No	67.2	6400	67.2	10/11/2010	No
PW-1B	2.80	900	2.80	10/11/2010	No	40.8	13000	52.9	10/11/2010	No
<b>Intermediate Wells</b>										
MW-14E	73.0	6540	76.0	10/11/2010	No	49.6	21200	54.7	10/11/2010	No
MW-18D	62.0	7800	66.0	10/11/2010	No	161	23100	161	10/11/2010	No
MW-19D	12.0	6300	34.0	10/11/2010	No	143	23000	143	10/11/2010	No
MW-20D	41.0	4100	43.0	10/11/2010	No	76.7	51000	76.7	10/11/2010	No
<b>Church of God Wells</b>										
MW-21D	7.00	3000	7.00	10/11/2010	No	16.0	35000	16.1	10/11/2010	No
MW-26D	U	52	0.78	10/12/2010	No	12.0	4800	12.1	10/12/2010	No
MW-27D	U	280	0.63	10/12/2010	No	3.90	6940	8.60	10/12/2010	No
<b>Other Toe Wells</b>										
MW-31	0.20	32	0.20	10/11/2010	No	U	535	8.10	10/11/2010	No
MW-41	U	8.3	U	10/14/2010	No	U	216	U	10/14/2010	No
<b>Sentinel Wells</b>										
AMW-45	U	U	U	10/21/2008	Yes	U	31	9.80	10/21/2008	Yes
MW-47	U	U	U	10/21/2008	Yes	U	17	3.20	10/21/2008	Yes
<b>NOTES:</b>										
Blue highlight	= attainment wells with groundwater concentrations statistically below the cleanup goals (for both TCE and Cr)									
Cr	= chromium									
TCE	= trichloroethene									
µg/L	= micrograms per liter									
U	= undetected									

**APPENDIX A**

**CHROMIUM CONCENTRATIONS IN  
GROUNDWATER**

## A1. Chromium Concentration Summary

Well Group	Well	Historical Maximum		Spring 2009	Fall 2009	Spring 2010	Fall 2010
		Date	Result				
Upgradient of TCE	AMW-6A	10/8/2007	17.7	11.5	7.7	7.0	5.0
	AMW-7A	10/10/2003	10 U	5.0 U	3.3 J	2.3 J	3.1 J
	AMW-10A	5/7/2008	12.5	3.4 B	8.1	3.2 J	10.1
	AMW-11A	10/5/2006	9.4	5.7	2.4 J	4.2 J	4.0 J
TCE Source	MW-1A	5/23/2001	78	--	--	--	6.8 UJ
Proximal	AMW-58	4/27/2006	34.7	--	--	--	3.6 J
	<b>MW-2A</b>	10/12/2004	<b>2,660</b>	--	<b>343</b>	--	<b>192</b>
	<b>MW-3A</b>	10/12/1999	<b>1,820</b>	--	<b>187</b>	--	<b>135</b>
	<b>MW-4A</b>	5/1/1995	<b>5,320</b>	--	<b>363</b>	--	<b>625</b>
	<b>MW-4B</b>	10/23/1996	<b>15,500</b>	--	<b>634</b>	--	<b>616</b>
	MW-6B	11/7/1995	<b>13,000</b>	33	21.1	31.7	28.2
	MW-10B	5/23/1995	<b>3,600</b>	50.2	45.7	49.3	45.2
	<b>MW-10C</b>	7/25/1995	<b>6,400</b>	<b>183</b>	<b>94.5</b>	<b>89.3</b>	67.2
	MW-12C	10/12/1999	19	--	4.5 J	--	5.0 U
	MW-13C	10/11/1999	<b>122</b>	--	32.7	--	27.5
	PW-1B	5/23/1995	<b>13,000</b>	40.8	43.4	74.6	52.9
Intermediate	AMW-16	10/9/2002	3 B	--	5.0 U	--	2.8 J
	CPU-14	10/12/1995	<b>957</b>	--	77.4	--	52.9
	<b>MW-14C</b>	5/23/1995	<b>20,000</b>	<b>94.4</b>	<b>98.8</b>	<b>101</b>	<b>94.7</b>
	MW-14E	5/10/1997	<b>21,200</b>	55.8	51.5	49.6	54.7
	MW-16E	10/9/2006	16.1	--	2.5 UJ	--	2.2 J
	<b>MW-18D</b>	2/3/1995	<b>23,100</b>	<b>172</b>	<b>173</b>	<b>166</b>	<b>161</b>
	MW-18E	12/11/2001	<b>597</b>	--	12.5	--	2.8 UJ
	<b>MW-19D</b>	5/23/1995	<b>23,000</b>	<b>217</b>	<b>190</b>	<b>150</b>	<b>143</b>
	<b>MW-20D</b>	5/23/1995	<b>51,000</b>	<b>99.9</b>	<b>88.1</b>	<b>83.4</b>	76.7
	PZ-39	10/12/1999	11	--	6.7 UJ	--	4.8 J
Church of God	AMW-14	4/20/1995	<b>8,300</b>	--	<b>83.3</b>	55.8	55.0
	AMW-27	6/2/1999	<b>7,630</b>	<b>87.3</b>	70.7	55.9	49.3
	AMW-61	10/29/2008	17.3	--	--	--	35.2
	CPU-12	10/23/2000	<b>245</b>	--	8.0	--	5.0 U
	CPU-13	7/25/1995	<b>5,000</b>	21.7	19.7	19.7	20.1
	MW-21D	5/23/1995	<b>35,000</b>	17.3	16.0	16.3	16.1
	MW-22D	5/23/1995	<b>11,000</b>	55.7	50.0	49.9	50.6
	MW-23D	5/24/2001	6.7	--	2.7 J	--	4.1 J
	MW-25D	5/23/1995	<b>16,000</b>	2.6 B	2.5 J	3.4 J	3.7 J

## A1. Chromium Concentration Summary

Well Group	Well	Historical Maximum		Spring 2009	Fall 2009	Spring 2010	Fall 2010
		Date	Result				
Church of God Cont.	MW-26D	1/17/1996	4,800	18.1	15.4	12.0	12.1
	MW-27D	5/16/1996	6,940	3.9 B	4.3 J	6.9	8.6
	MW-49	12/21/2000	36,800	26.5	23.1	18.3	17.4
Toe of Plume: Other Toe	AMW-42	5/10/1999	2,280	--	19.5	--	18.2
	AMW-63	10/15/2009	12.4	9.1 UJ	12.4	--	6.8
	MW-31	10/2/1998	535	--	8.4	--	8.1
	MW-35	9/14/1999	8,050	32.4	25.7	30.6	28.8
	MW-41	10/19/2004	216	5.0 U	5.0 U	--	5.0 U
Troutdale Aquifer	AMW-24	10/2/2006	6.2	--	5.0 U	--	2.7 J
	AMW-25	10/22/2008	5.0 U	--	--	--	1.9 J
	AMW-50	10/22/2008	2.3 B	--	--	--	1.8 J
	AMW-51	10/23/2008	6.2	--	--	--	4.3 J
	AMW-62	10/15/2009	5 U	--	5.0 U	--	5.0 U
	BENNETT	10/15/2009	5 U	5.0 U	5.0 U	5.0 U	5.0 U
	CPU-2	10/27/2008	5 U	--	--	--	2.4 J
	CPU-3D	10/23/2008	2.1 B	--	--	--	3.1 J
	CPU-10	10/27/2008	2.2 B	--	--	--	5.0 U
	MW-33	10/22/2009	40.5	--	40.5	--	3.3 J
	MW-34	10/23/2008	2.7 B	--	--	--	5.0 U

## NOTES:

Only wells sampled during Fall 2010 are included in this table.

Results are in micrograms per liter ( $\mu\text{g/L}$ ).

Results are for total chromium, unless otherwise noted.

B or J = The result is an estimated concentration that is less than the Method Reporting Limit but greater than or equal to the Method Detection Limit.

-- = Well not sampled during that monitoring event.

U = Analyte not detected above the specified reporting limit.

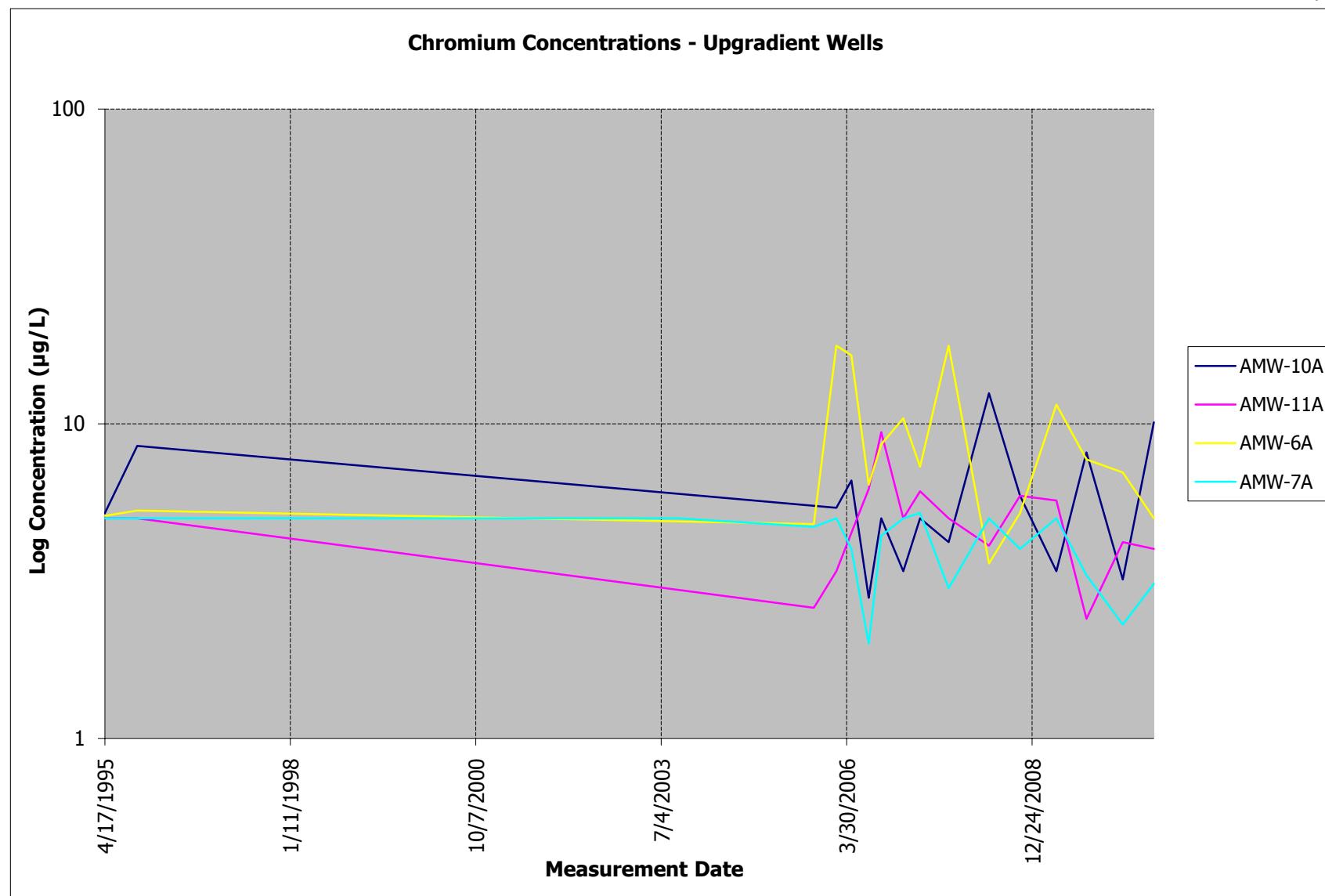
UJ = The analyte was not detected, but the associated limit of quantitation is estimated due to discrepancies in quality control criteria.

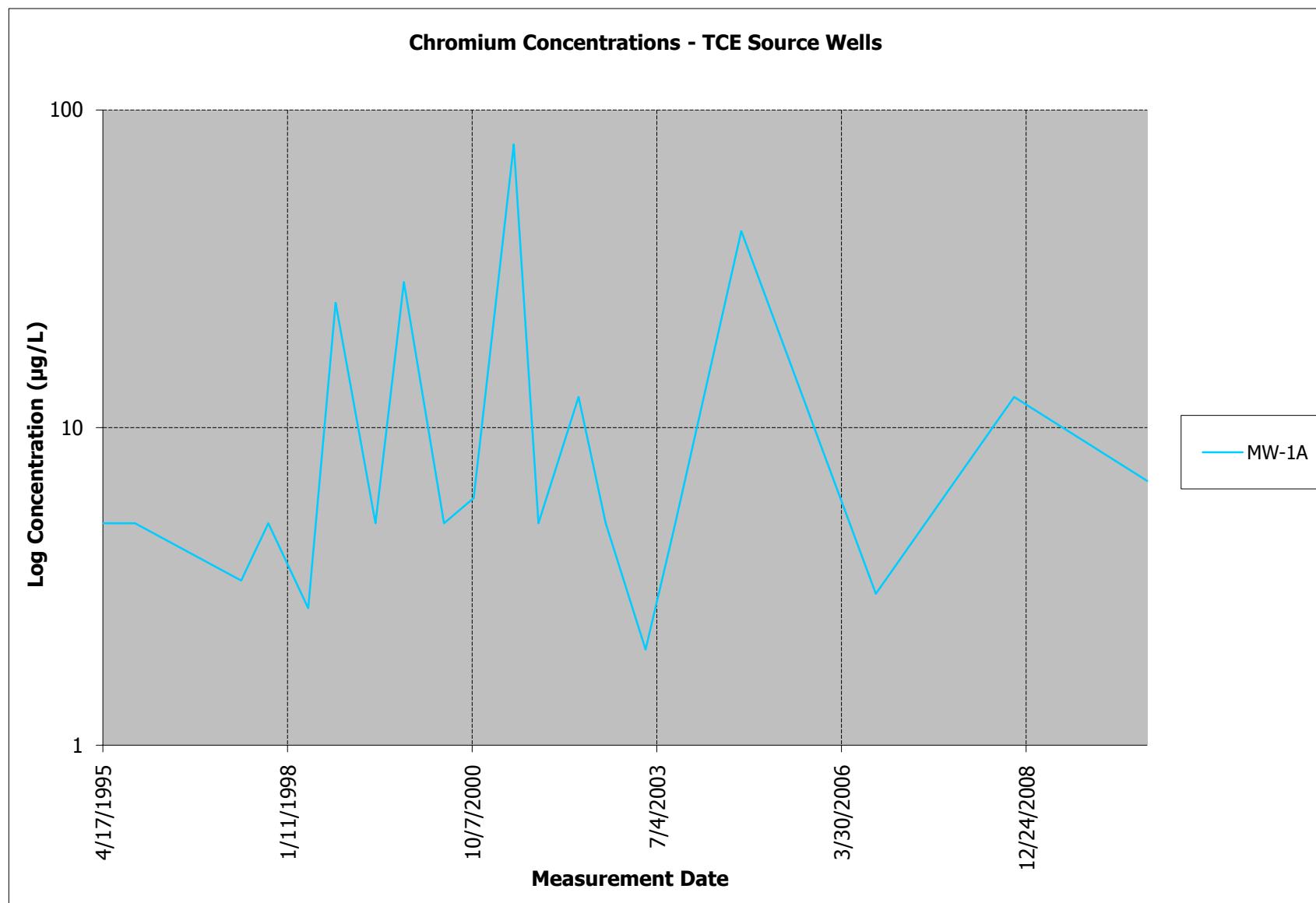
Results shown in red are above the cleanup level of 80  $\mu\text{g/L}$ .

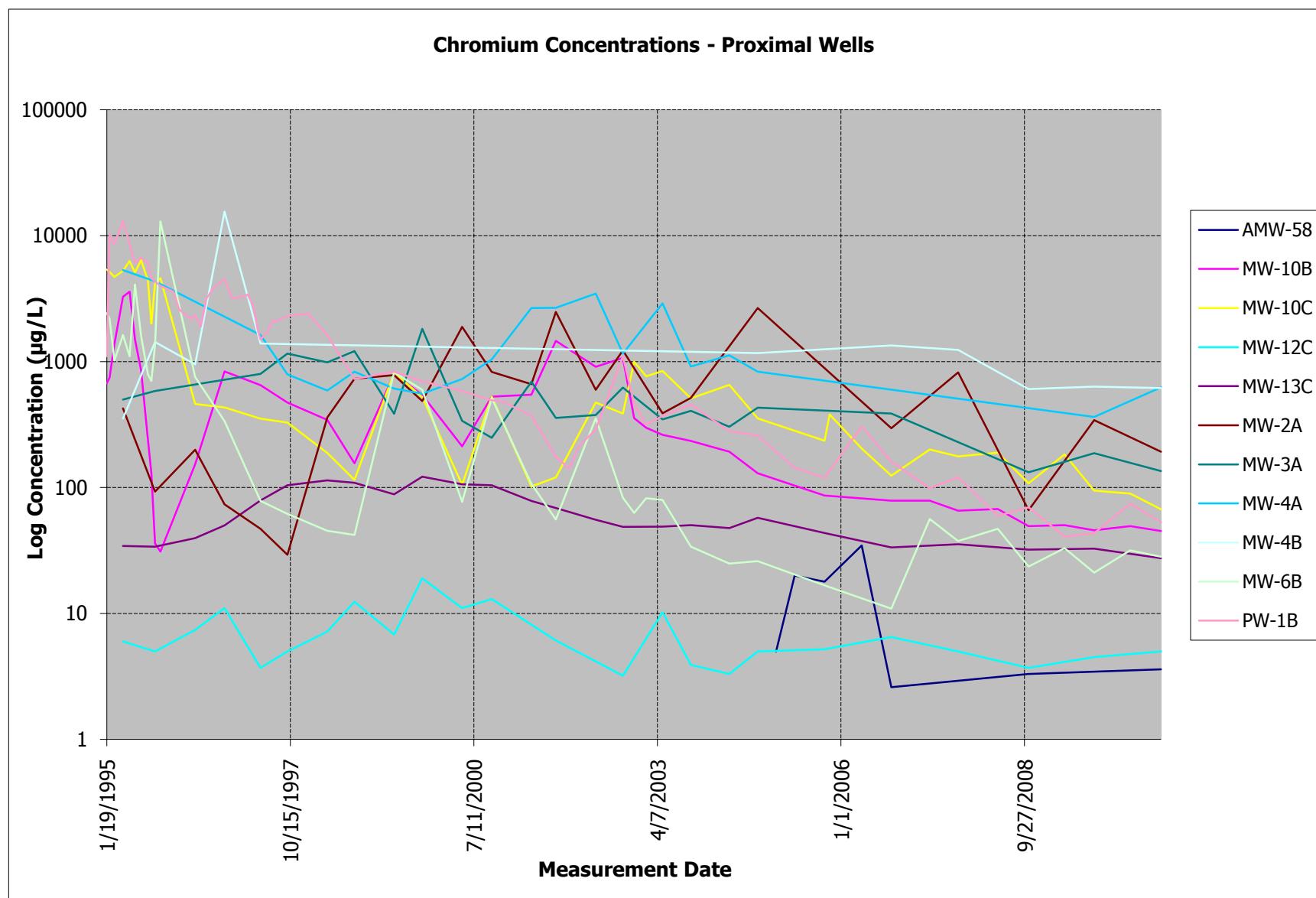
Wells shown in red were above the cleanup level of 80  $\mu\text{g/L}$  for the 2010 reporting period.

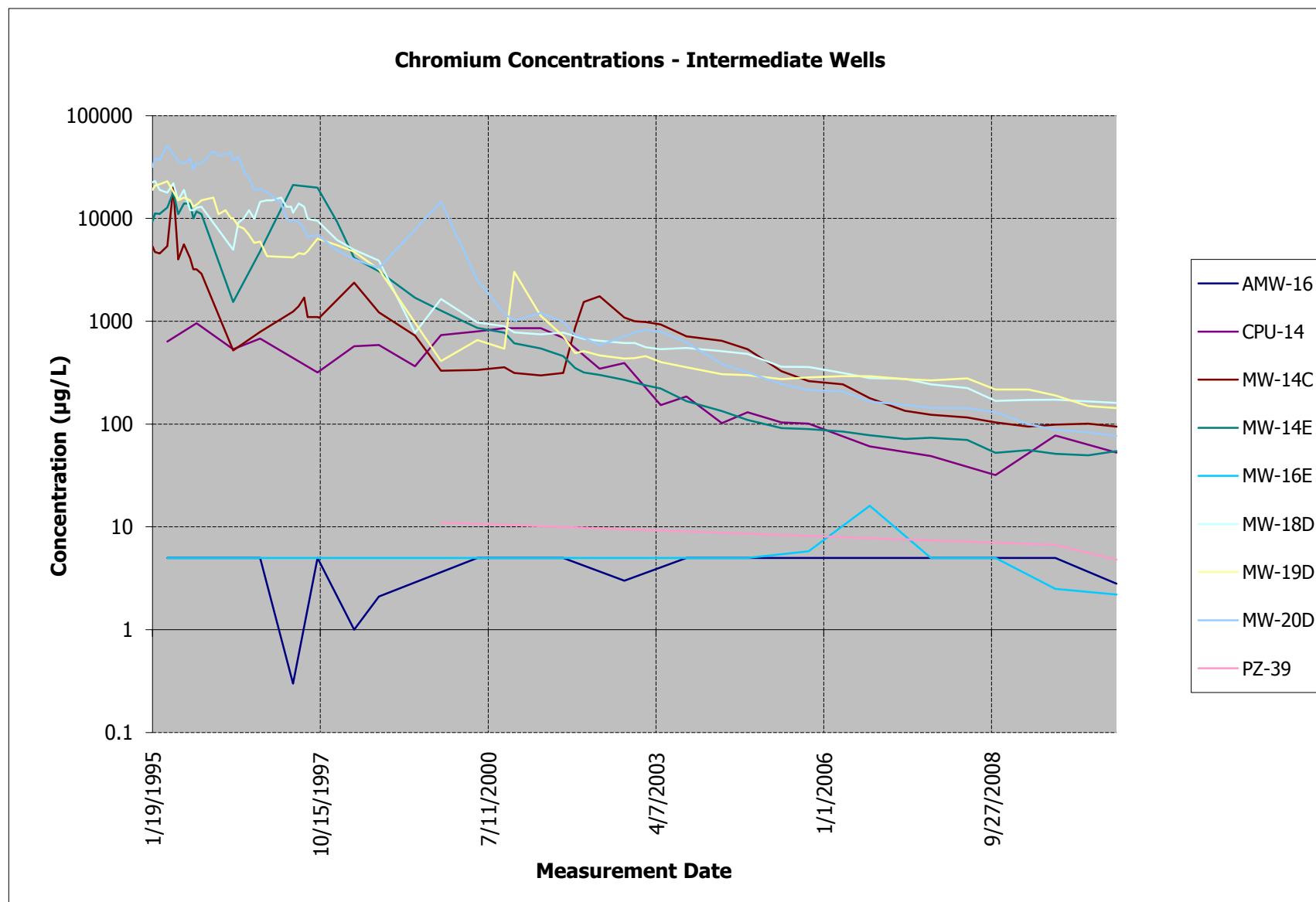
**APPENDIX A-2**

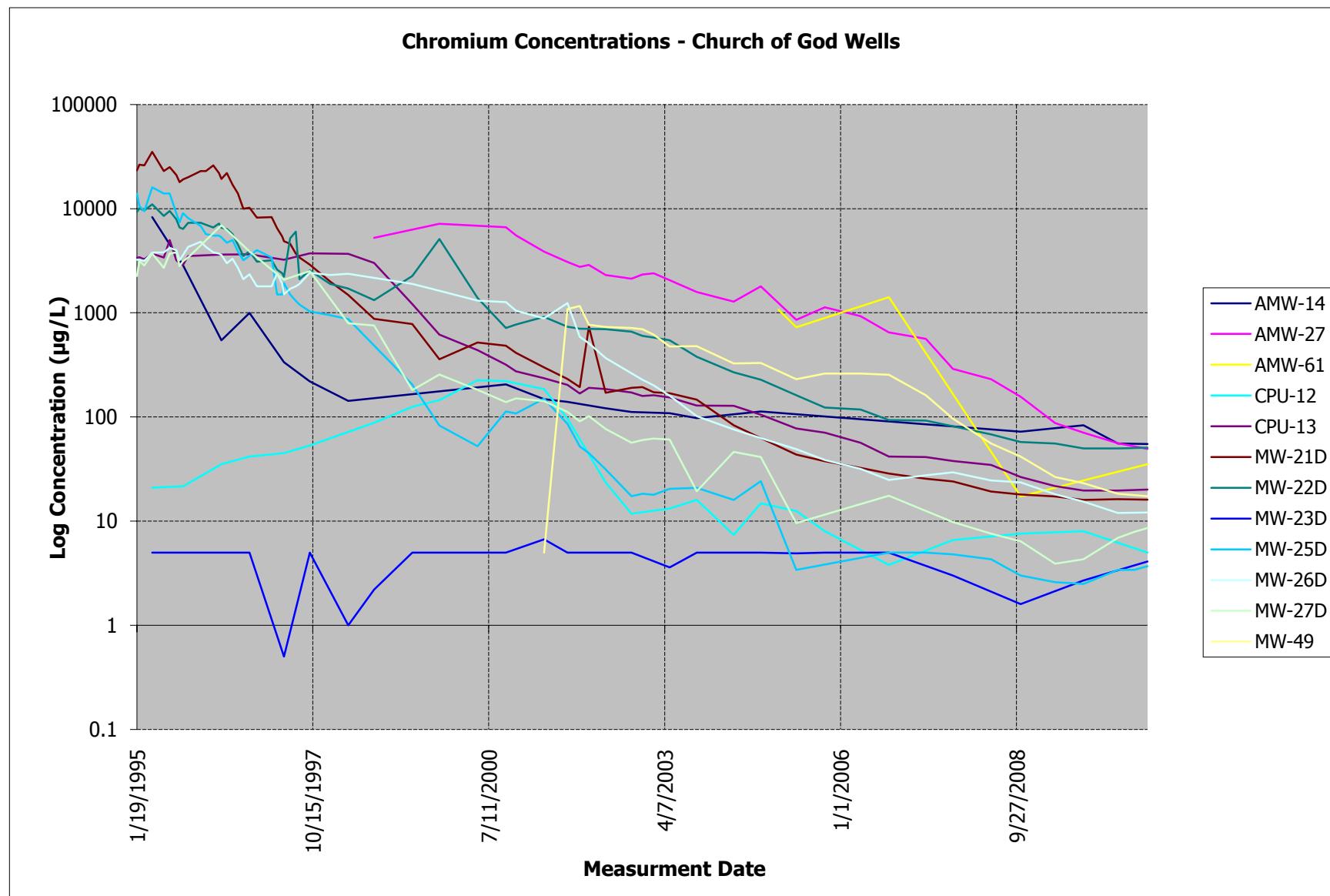
**CHROMIUM CONCENTRATIONS –  
BY WELL GROUPING**

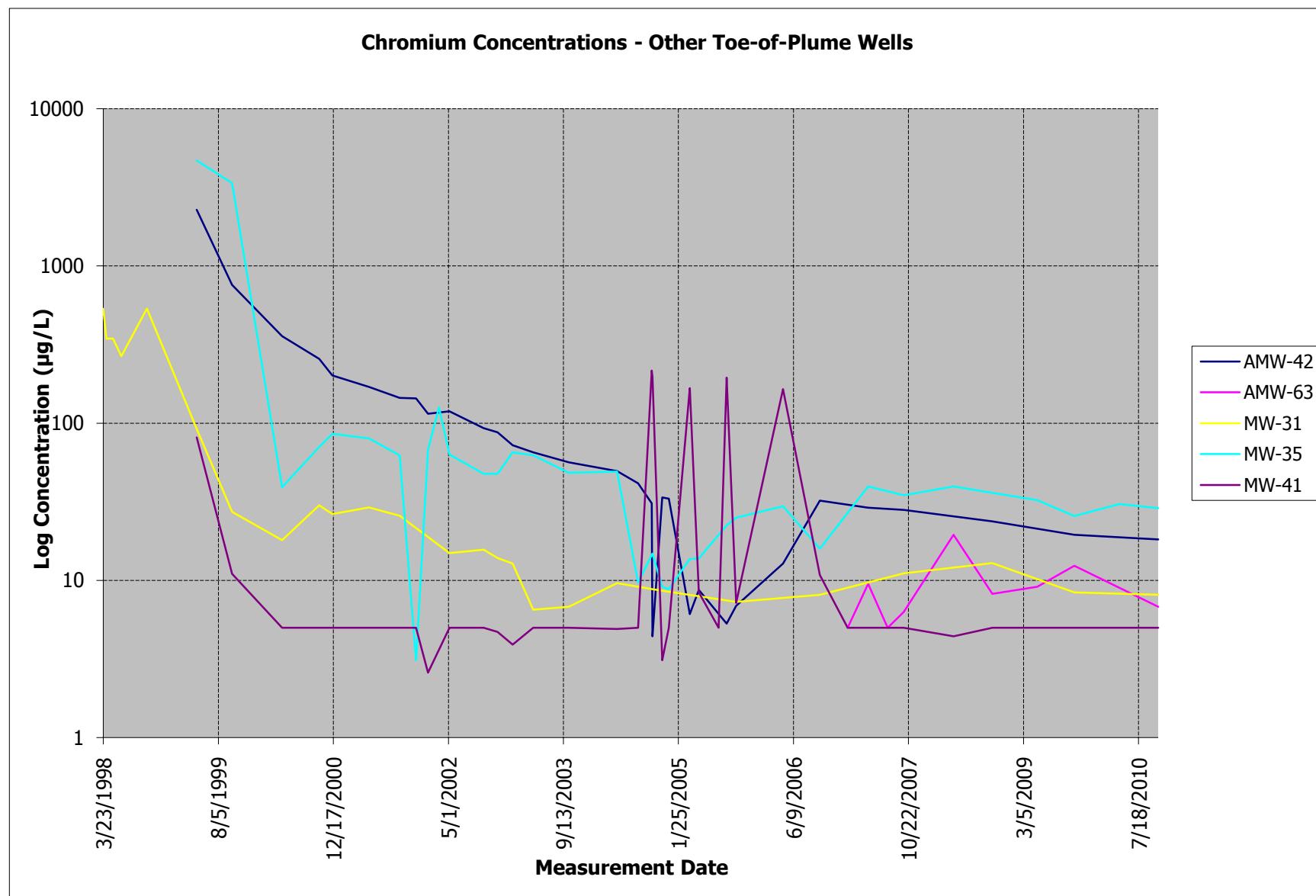


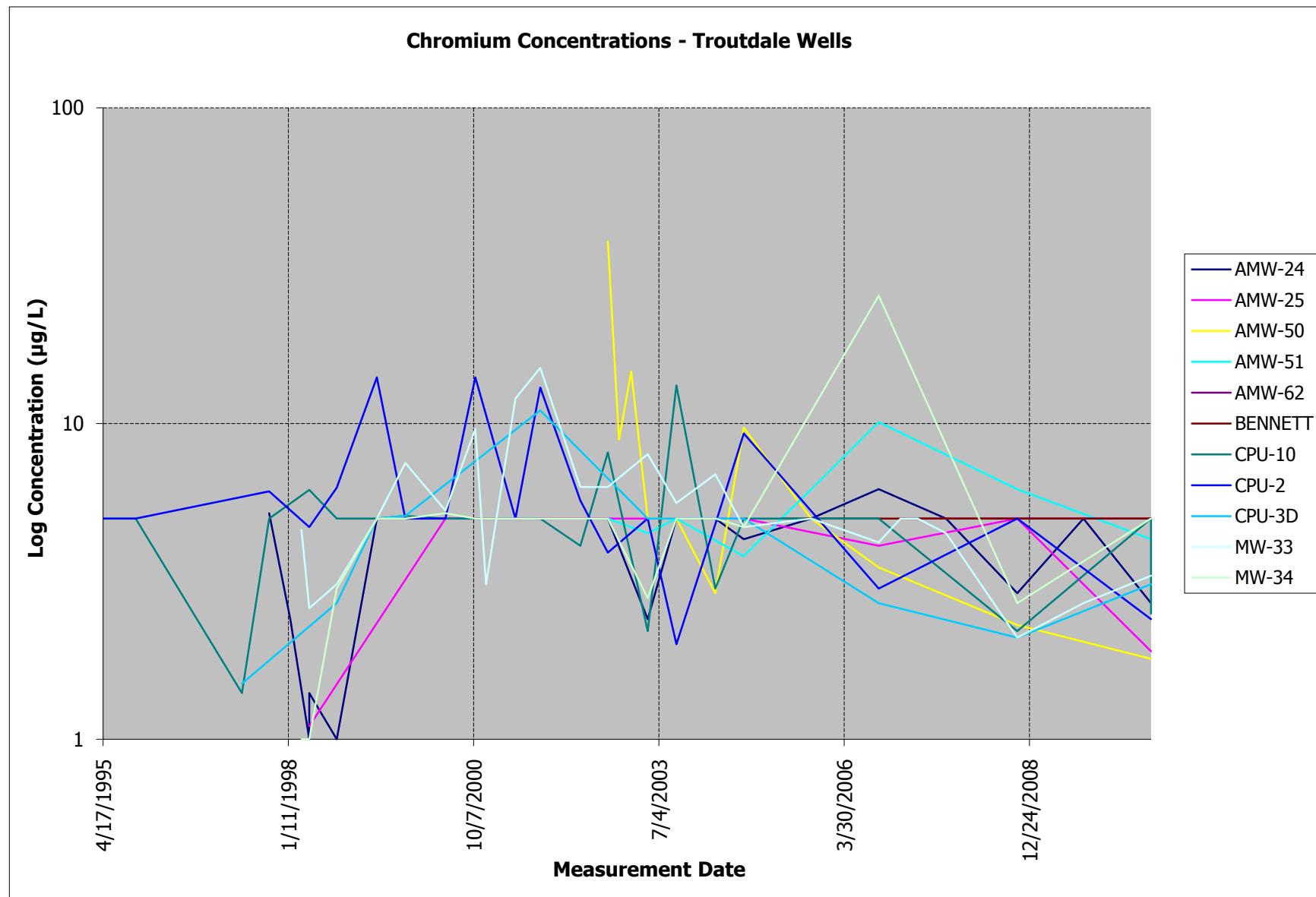












**APPENDIX A-3**

**CHROMIUM CONCENTRATIONS –  
INDIVIDUAL WELLS**

## APPENDIX A-3 TABLE OF CONTENTS

	<u>Page</u>
<b>Upgradient Wells</b>	
AMW-6A .....	1
AMW-7A .....	2
AMW-10A .....	3
AMW-11A .....	4
<b>TCE Source Wells</b>	
MW-1A .....	1
<b>Proximal Wells</b>	
AMW-58 .....	1
MW-2A .....	2
MW-3A .....	3
MW-4A .....	4
MW-4B .....	5
MW-4BShed .....	6
MW-6A .....	7
MW-6B .....	8
MW-9C .....	9
MW-10B .....	10
MW-10C .....	11
MW-12C .....	12
MW-13C .....	13
PW-1B .....	14
<b>Intermediate Wells</b>	
AMW-16 .....	1
CPU-14 .....	2
MW-14C .....	3
MW-14E .....	4
MW-16E .....	5
MW-18D .....	6
MW-18E .....	7
MW-19D .....	8
MW-20D .....	9
<b>Church of God Wells</b>	
AMW-14 .....	1
AMW-27 .....	2
AMW-61 .....	3
CPU-12 .....	4

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CPU-13 .....	5
MW-21D .....	6
MW-22D .....	7
MW-23D .....	8
MW-25D .....	9
MW-26D .....	10
MW-27D .....	11
MW-49 .....	12

**Toe of Plume – Other Toe Wells**

AMW-42 .....	1
AMW-63 .....	2
MW-31 .....	3
MW-35 .....	4
MW-41 .....	5

**Troutdale Wells**

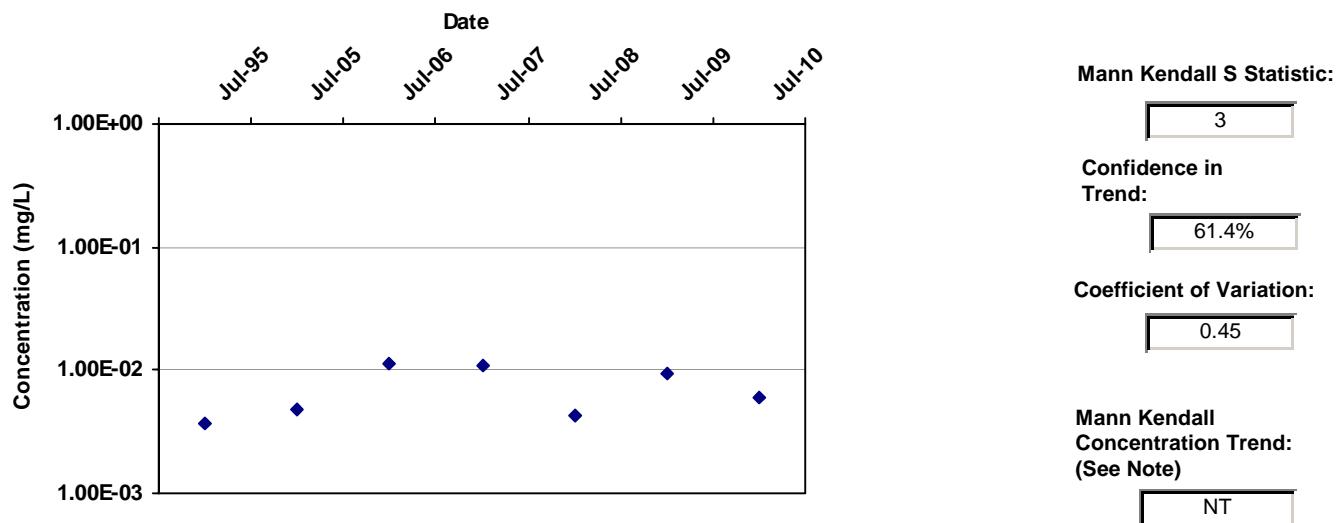
AMW-24 .....	1
AMW-25 .....	2
AMW-50 .....	3
AMW-51 .....	4
AMW-62 .....	5
BENNETT .....	6
CPU-2 .....	7
CPU-3D .....	8
CPU-10 .....	9
MW-33 .....	10
MW-34 .....	11

## **UPGRADIENT WELLS**

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-6A  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

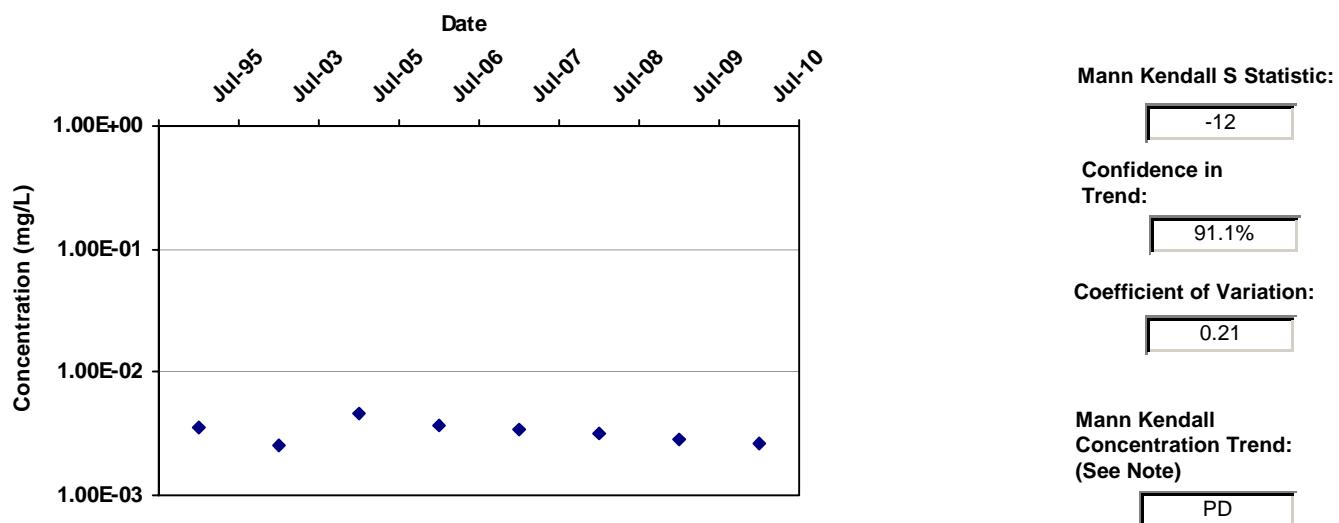
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-6A	T	7/1/1995	CHROMIUM, HEXAVALENT	3.7E-03		2	1
AMW-6A	T	7/1/2005	CHROMIUM, HEXAVALENT	4.8E-03		1	1
AMW-6A	T	7/1/2006	CHROMIUM, HEXAVALENT	1.1E-02		4	4
AMW-6A	T	7/1/2007	CHROMIUM, HEXAVALENT	1.1E-02		3	3
AMW-6A	T	7/1/2008	CHROMIUM, HEXAVALENT	4.3E-03		2	2
AMW-6A	T	7/1/2009	CHROMIUM, HEXAVALENT	9.4E-03		2	2
AMW-6A	T	7/1/2010	CHROMIUM, HEXAVALENT	5.9E-03		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-7A  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

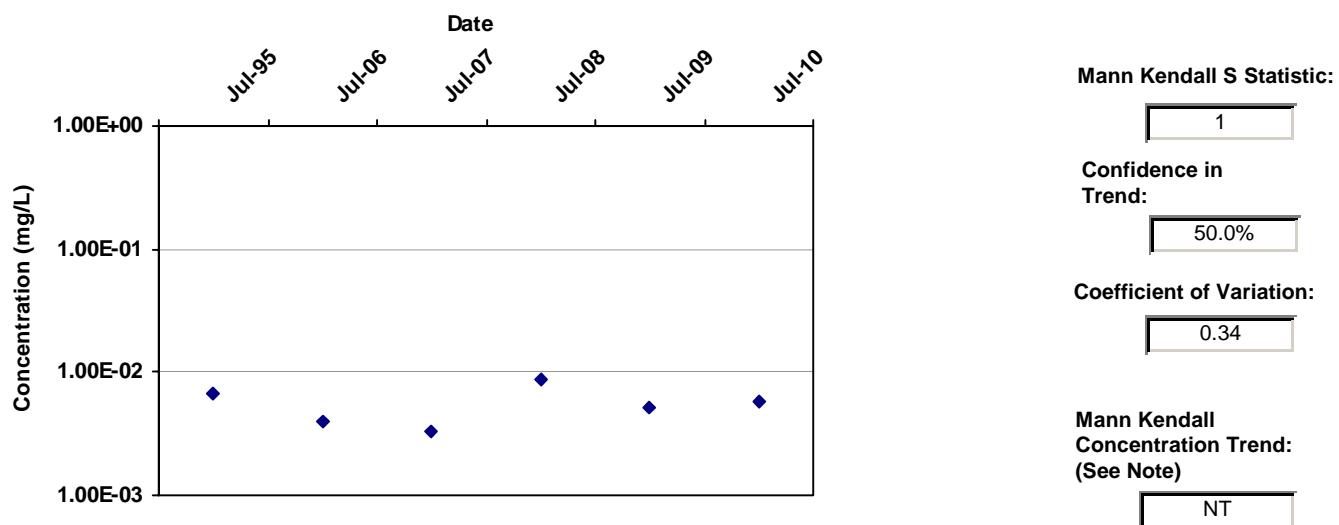
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-7A	T	7/1/1995	CHROMIUM, HEXAVALENT	3.5E-03		2	1
AMW-7A	T	7/1/2003	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0
AMW-7A	T	7/1/2005	CHROMIUM, HEXAVALENT	4.7E-03		1	1
AMW-7A	T	7/1/2006	CHROMIUM, HEXAVALENT	3.6E-03		4	4
AMW-7A	T	7/1/2007	CHROMIUM, HEXAVALENT	3.4E-03		3	2
AMW-7A	T	7/1/2008	CHROMIUM, HEXAVALENT	3.2E-03		2	1
AMW-7A	T	7/1/2009	CHROMIUM, HEXAVALENT	2.9E-03		2	1
AMW-7A	T	7/1/2010	CHROMIUM, HEXAVALENT	2.7E-03		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-10A  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

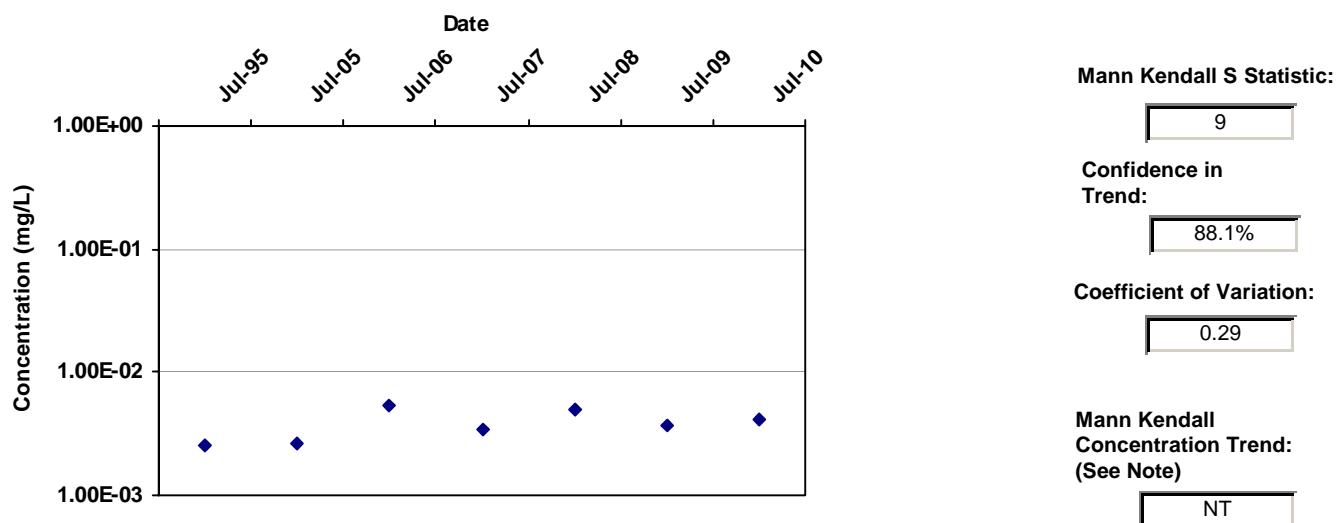
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-10A	T	7/1/1995	CHROMIUM, HEXAVALENT	6.6E-03		2	2
AMW-10A	T	7/1/2006	CHROMIUM, HEXAVALENT	4.0E-03		4	3
AMW-10A	T	7/1/2007	CHROMIUM, HEXAVALENT	3.3E-03		3	2
AMW-10A	T	7/1/2008	CHROMIUM, HEXAVALENT	8.6E-03		2	2
AMW-10A	T	7/1/2009	CHROMIUM, HEXAVALENT	5.2E-03		2	2
AMW-10A	T	7/1/2010	CHROMIUM, HEXAVALENT	5.7E-03		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-11A  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-11A	T	7/1/1995	CHROMIUM, HEXAVALENT	2.5E-03	ND	2	0
AMW-11A	T	7/1/2005	CHROMIUM, HEXAVALENT	2.6E-03		1	1
AMW-11A	T	7/1/2006	CHROMIUM, HEXAVALENT	5.5E-03		4	4
AMW-11A	T	7/1/2007	CHROMIUM, HEXAVALENT	3.4E-03		3	1
AMW-11A	T	7/1/2008	CHROMIUM, HEXAVALENT	4.9E-03		2	2
AMW-11A	T	7/1/2009	CHROMIUM, HEXAVALENT	3.7E-03		2	2
AMW-11A	T	7/1/2010	CHROMIUM, HEXAVALENT	4.1E-03		2	2

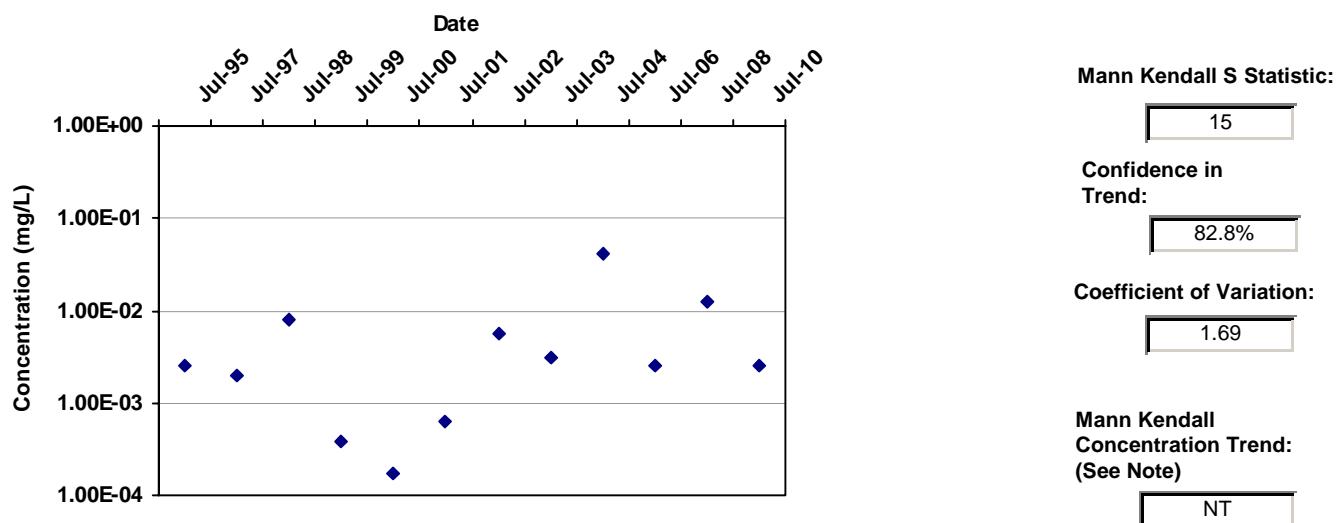
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

## **TCE SOURCE WELLS**

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-1A  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-1A	T	7/1/1995	CHROMIUM, HEXAVALENT	2.5E-03	ND	2	0
MW-1A	T	7/1/1997	CHROMIUM, HEXAVALENT	2.0E-03	ND	2	0
MW-1A	T	7/1/1998	CHROMIUM, HEXAVALENT	8.2E-03		2	2
MW-1A	T	7/1/1999	CHROMIUM, HEXAVALENT	3.8E-04		2	1
MW-1A	T	7/1/2000	CHROMIUM, HEXAVALENT	1.7E-04		2	1
MW-1A	T	7/1/2001	CHROMIUM, HEXAVALENT	6.2E-04		2	1
MW-1A	T	7/1/2002	CHROMIUM, HEXAVALENT	5.6E-03		2	1
MW-1A	T	7/1/2003	CHROMIUM, HEXAVALENT	3.1E-03		2	2
MW-1A	T	7/1/2004	CHROMIUM, HEXAVALENT	4.2E-02		1	1
MW-1A	T	7/1/2006	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0
MW-1A	T	7/1/2008	CHROMIUM, HEXAVALENT	1.3E-02		1	1
MW-1A	T	7/1/2010	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

## **PROXIMAL WELLS**

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-58

**Well Type:** S

**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to  10/20/2010

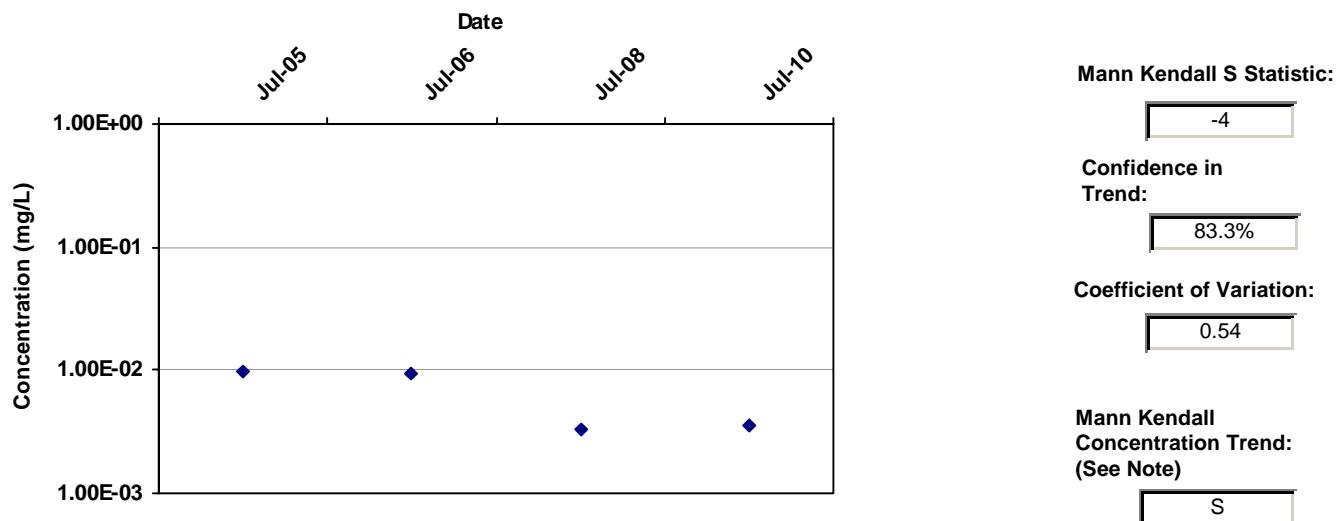
**Consolidation Period:** Yearly

**Consolidation Type:** Geometric Mean

**Duplicate Consolidation:** Maximum

**ND Values:** 1/2 Detection Limit

**J Flag Values :** Actual Value



## Data Table:

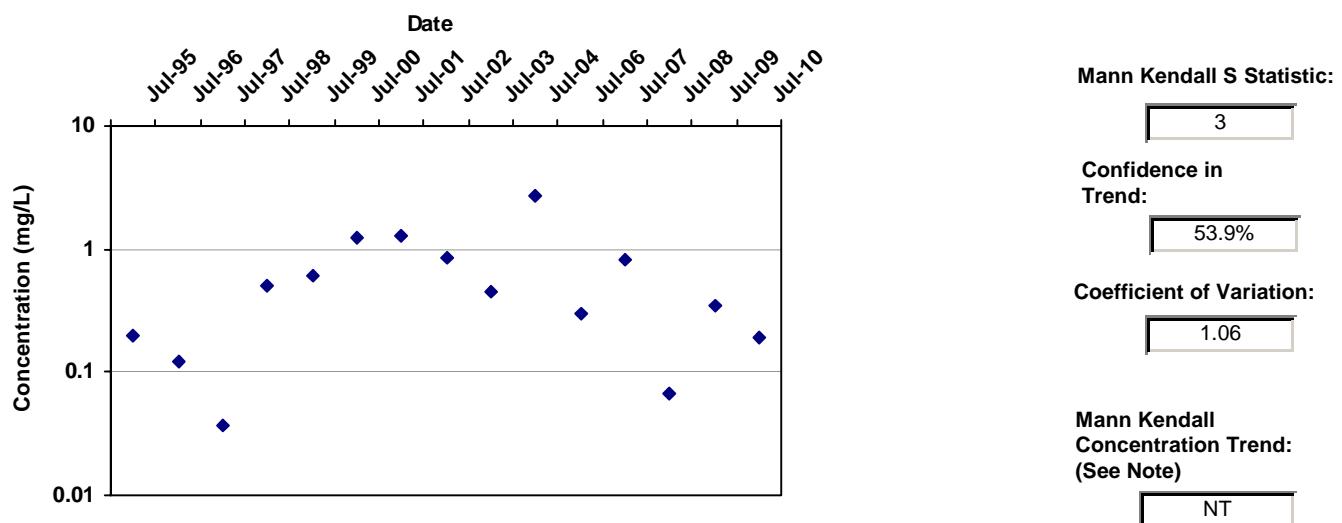
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-58	S	7/1/2005	CHROMIUM, HEXAVALENT	9.6E-03		3	2
AMW-58	S	7/1/2006	CHROMIUM, HEXAVALENT	9.5E-03		2	2
AMW-58	S	7/1/2008	CHROMIUM, HEXAVALENT	3.3E-03		1	1
AMW-58	S	7/1/2010	CHROMIUM, HEXAVALENT	3.6E-03		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-2A  
**Well Type:** S  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

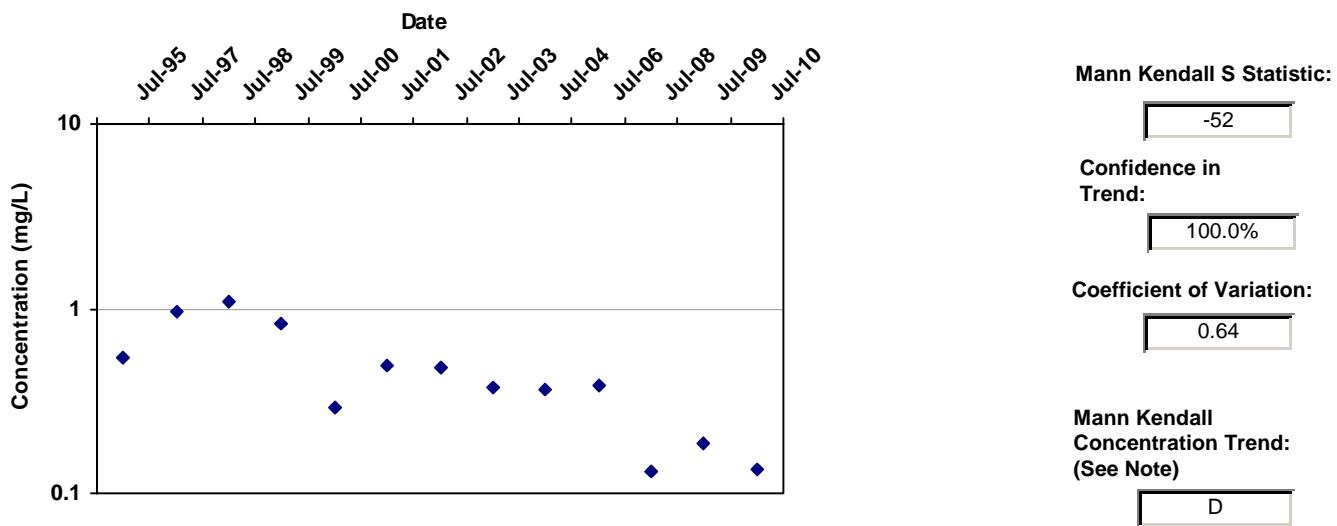
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-2A	S	7/1/1995	CHROMIUM, HEXAVALENT	2.0E-01		2	2
MW-2A	S	7/1/1996	CHROMIUM, HEXAVALENT	1.2E-01		2	2
MW-2A	S	7/1/1997	CHROMIUM, HEXAVALENT	3.7E-02		2	2
MW-2A	S	7/1/1998	CHROMIUM, HEXAVALENT	5.1E-01		2	2
MW-2A	S	7/1/1999	CHROMIUM, HEXAVALENT	6.2E-01		2	2
MW-2A	S	7/1/2000	CHROMIUM, HEXAVALENT	1.2E+00		2	2
MW-2A	S	7/1/2001	CHROMIUM, HEXAVALENT	1.3E+00		2	2
MW-2A	S	7/1/2002	CHROMIUM, HEXAVALENT	8.6E-01		2	2
MW-2A	S	7/1/2003	CHROMIUM, HEXAVALENT	4.5E-01		2	2
MW-2A	S	7/1/2004	CHROMIUM, HEXAVALENT	2.7E+00		1	1
MW-2A	S	7/1/2006	CHROMIUM, HEXAVALENT	3.0E-01		1	1
MW-2A	S	7/1/2007	CHROMIUM, HEXAVALENT	8.2E-01		1	1
MW-2A	S	7/1/2008	CHROMIUM, HEXAVALENT	6.6E-02		1	1
MW-2A	S	7/1/2009	CHROMIUM, HEXAVALENT	3.4E-01		1	1
MW-2A	S	7/1/2010	CHROMIUM, HEXAVALENT	1.9E-01		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-3A  
**Well Type:** S  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

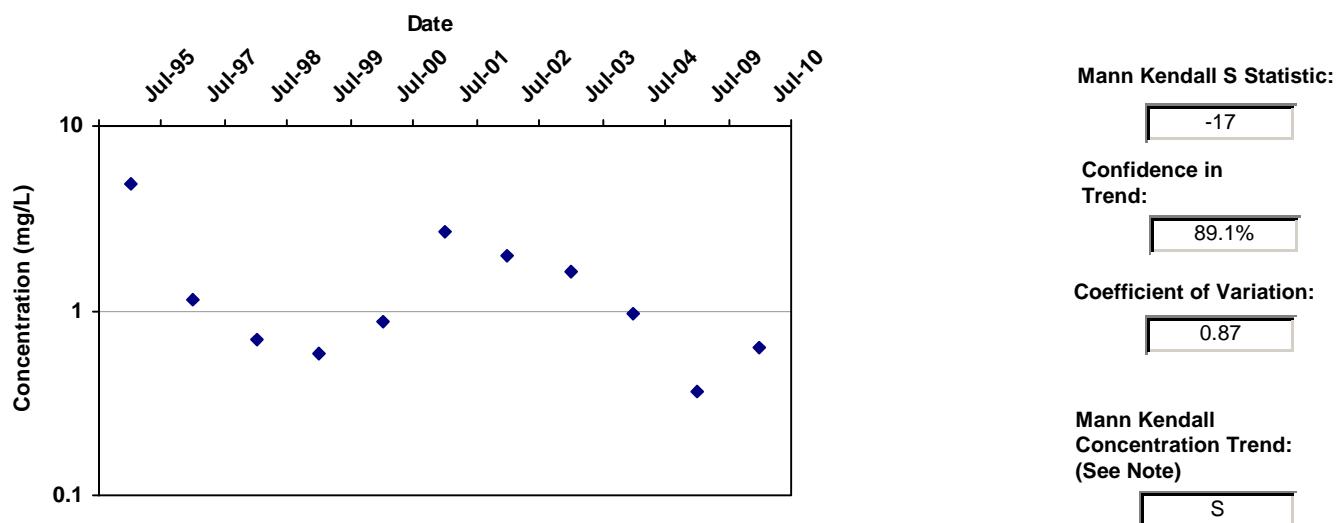
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-3A	S	7/1/1995	CHROMIUM, HEXAVALENT	5.4E-01		2	2
MW-3A	S	7/1/1997	CHROMIUM, HEXAVALENT	9.6E-01		2	2
MW-3A	S	7/1/1998	CHROMIUM, HEXAVALENT	1.1E+00		2	2
MW-3A	S	7/1/1999	CHROMIUM, HEXAVALENT	8.4E-01		2	2
MW-3A	S	7/1/2000	CHROMIUM, HEXAVALENT	2.9E-01		2	2
MW-3A	S	7/1/2001	CHROMIUM, HEXAVALENT	5.0E-01		2	2
MW-3A	S	7/1/2002	CHROMIUM, HEXAVALENT	4.8E-01		2	2
MW-3A	S	7/1/2003	CHROMIUM, HEXAVALENT	3.8E-01		2	2
MW-3A	S	7/1/2004	CHROMIUM, HEXAVALENT	3.6E-01		2	2
MW-3A	S	7/1/2006	CHROMIUM, HEXAVALENT	3.9E-01		1	1
MW-3A	S	7/1/2008	CHROMIUM, HEXAVALENT	1.3E-01		1	1
MW-3A	S	7/1/2009	CHROMIUM, HEXAVALENT	1.9E-01		1	1
MW-3A	S	7/1/2010	CHROMIUM, HEXAVALENT	1.4E-01		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-4A  
**Well Type:** S  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

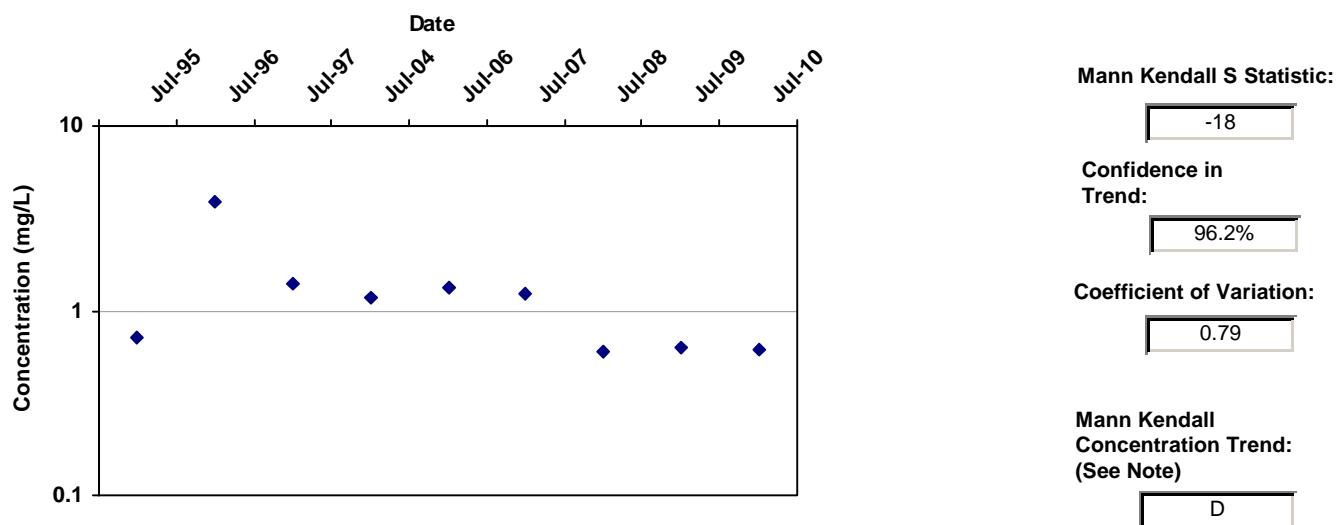
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-4A	S	7/1/1995	CHROMIUM, HEXAVALENT	4.8E+00		2	2
MW-4A	S	7/1/1997	CHROMIUM, HEXAVALENT	1.1E+00		2	2
MW-4A	S	7/1/1998	CHROMIUM, HEXAVALENT	7.0E-01		2	2
MW-4A	S	7/1/1999	CHROMIUM, HEXAVALENT	5.8E-01		2	2
MW-4A	S	7/1/2000	CHROMIUM, HEXAVALENT	8.7E-01		2	2
MW-4A	S	7/1/2001	CHROMIUM, HEXAVALENT	2.7E+00		2	2
MW-4A	S	7/1/2002	CHROMIUM, HEXAVALENT	2.0E+00		2	2
MW-4A	S	7/1/2003	CHROMIUM, HEXAVALENT	1.6E+00		2	2
MW-4A	S	7/1/2004	CHROMIUM, HEXAVALENT	9.7E-01		2	2
MW-4A	S	7/1/2009	CHROMIUM, HEXAVALENT	3.6E-01		1	1
MW-4A	S	7/1/2010	CHROMIUM, HEXAVALENT	6.3E-01		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-4B  
**Well Type:** S  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

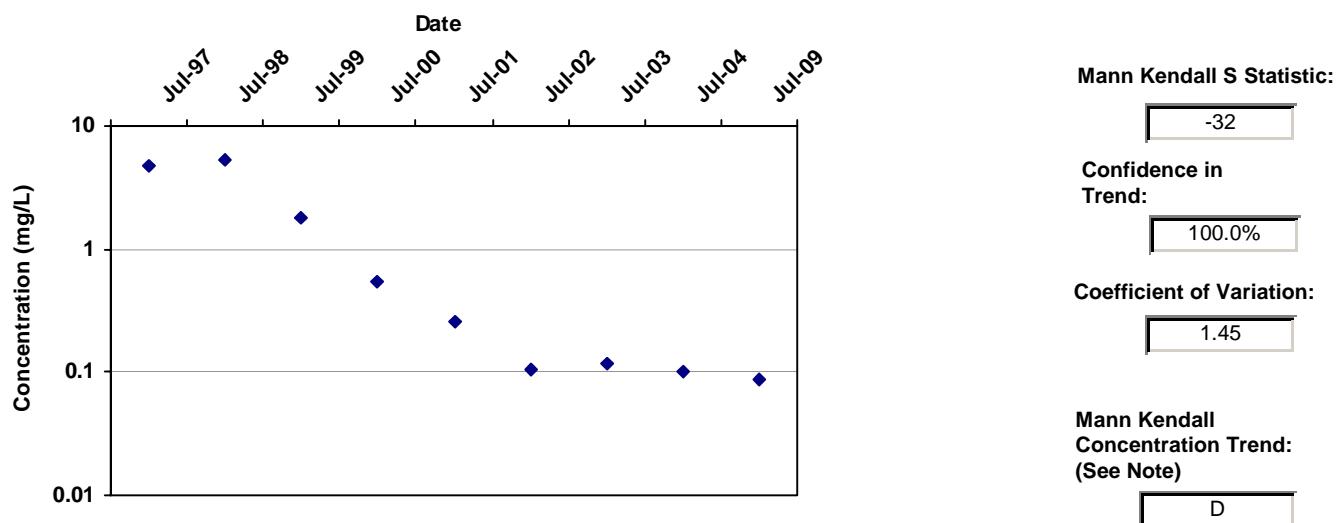
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-4B	S	7/1/1995	CHROMIUM, HEXAVALENT	7.1E-01		2	2
MW-4B	S	7/1/1996	CHROMIUM, HEXAVALENT	3.8E+00		2	2
MW-4B	S	7/1/1997	CHROMIUM, HEXAVALENT	1.4E+00		1	1
MW-4B	S	7/1/2004	CHROMIUM, HEXAVALENT	1.2E+00		1	1
MW-4B	S	7/1/2006	CHROMIUM, HEXAVALENT	1.3E+00		1	1
MW-4B	S	7/1/2007	CHROMIUM, HEXAVALENT	1.2E+00		1	1
MW-4B	S	7/1/2008	CHROMIUM, HEXAVALENT	6.1E-01		1	1
MW-4B	S	7/1/2009	CHROMIUM, HEXAVALENT	6.3E-01		1	1
MW-4B	S	7/1/2010	CHROMIUM, HEXAVALENT	6.2E-01		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-4BSHE  
**Well Type:** S  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-4BSHED	S	7/1/1997	CHROMIUM, HEXAVALENT	4.8E+00		2	2
MW-4BSHED	S	7/1/1998	CHROMIUM, HEXAVALENT	5.4E+00		2	2
MW-4BSHED	S	7/1/1999	CHROMIUM, HEXAVALENT	1.8E+00		2	2
MW-4BSHED	S	7/1/2000	CHROMIUM, HEXAVALENT	5.3E-01		2	2
MW-4BSHED	S	7/1/2001	CHROMIUM, HEXAVALENT	2.6E-01		2	2
MW-4BSHED	S	7/1/2002	CHROMIUM, HEXAVALENT	1.1E-01		2	2
MW-4BSHED	S	7/1/2003	CHROMIUM, HEXAVALENT	1.2E-01		2	2
MW-4BSHED	S	7/1/2004	CHROMIUM, HEXAVALENT	1.0E-01		1	1
MW-4BSHED	S	7/1/2009	CHROMIUM, HEXAVALENT	8.6E-02		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-6A  
**Well Type:** S  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

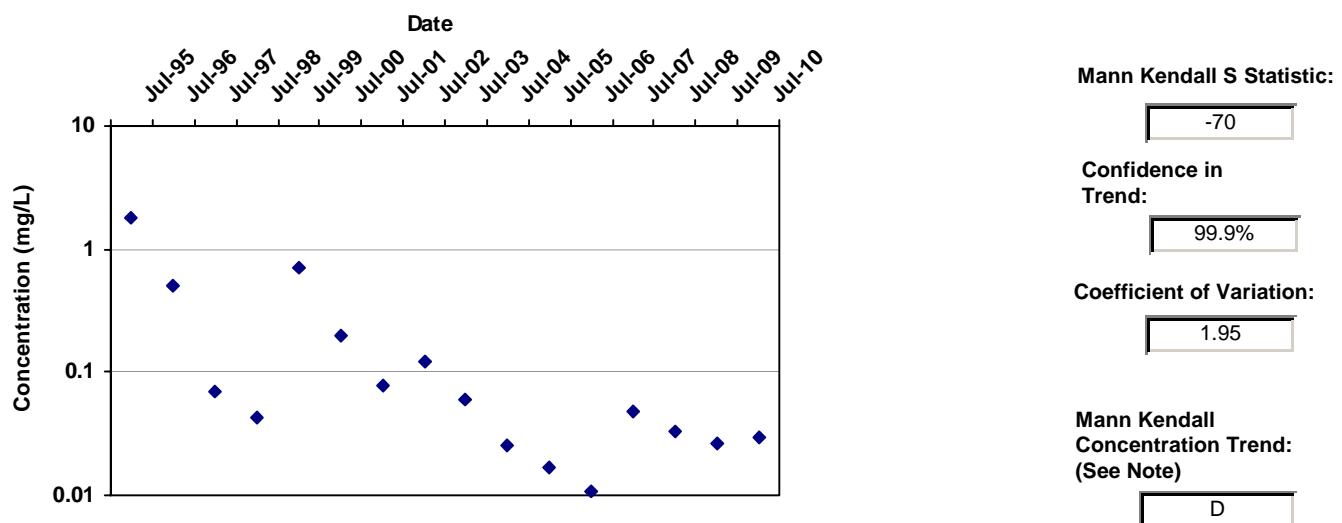
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-6A	S	7/1/1995	CHROMIUM, HEXAVALENT	8.3E-03		2	1
MW-6A	S	7/1/1997	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0
MW-6A	S	7/1/2009	CHROMIUM, HEXAVALENT	1.7E-01		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-6B  
**Well Type:** S  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

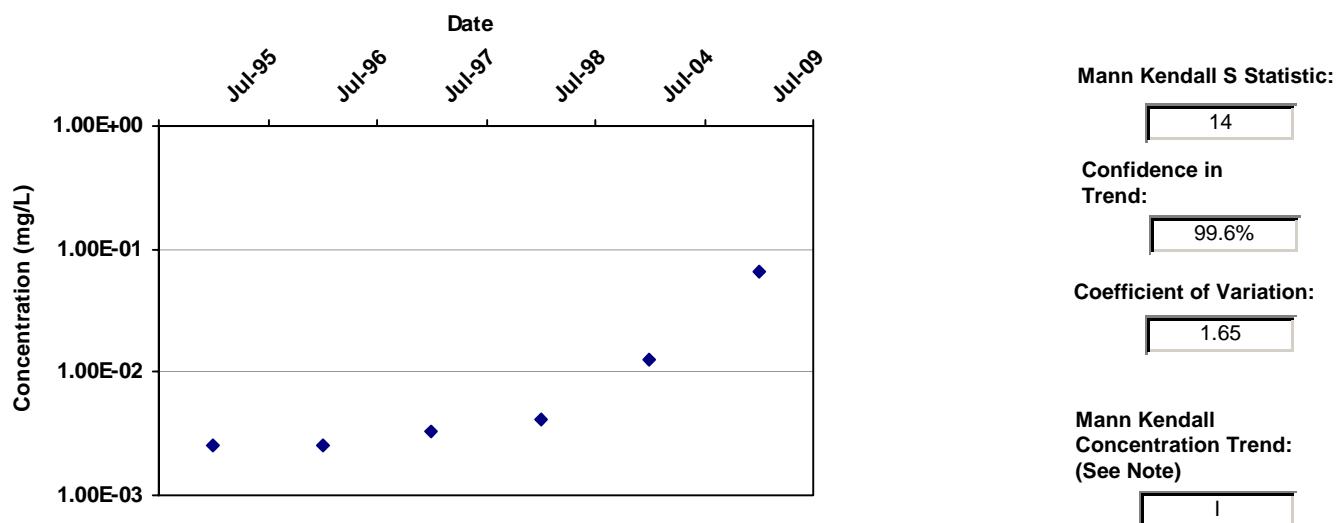
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-6B	S	7/1/1995	CHROMIUM, HEXAVALENT	1.8E+00		11	11
MW-6B	S	7/1/1996	CHROMIUM, HEXAVALENT	5.0E-01		2	2
MW-6B	S	7/1/1997	CHROMIUM, HEXAVALENT	7.0E-02		2	2
MW-6B	S	7/1/1998	CHROMIUM, HEXAVALENT	4.4E-02		2	2
MW-6B	S	7/1/1999	CHROMIUM, HEXAVALENT	7.0E-01		2	2
MW-6B	S	7/1/2000	CHROMIUM, HEXAVALENT	2.0E-01		2	2
MW-6B	S	7/1/2001	CHROMIUM, HEXAVALENT	7.7E-02		2	2
MW-6B	S	7/1/2002	CHROMIUM, HEXAVALENT	1.2E-01		3	3
MW-6B	S	7/1/2003	CHROMIUM, HEXAVALENT	6.1E-02		3	3
MW-6B	S	7/1/2004	CHROMIUM, HEXAVALENT	2.5E-02		2	2
MW-6B	S	7/1/2005	CHROMIUM, HEXAVALENT	1.7E-02		1	1
MW-6B	S	7/1/2006	CHROMIUM, HEXAVALENT	1.1E-02		1	1
MW-6B	S	7/1/2007	CHROMIUM, HEXAVALENT	4.9E-02		2	2
MW-6B	S	7/1/2008	CHROMIUM, HEXAVALENT	3.3E-02		2	2
MW-6B	S	7/1/2009	CHROMIUM, HEXAVALENT	2.6E-02		2	2
MW-6B	S	7/1/2010	CHROMIUM, HEXAVALENT	3.0E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-9C  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

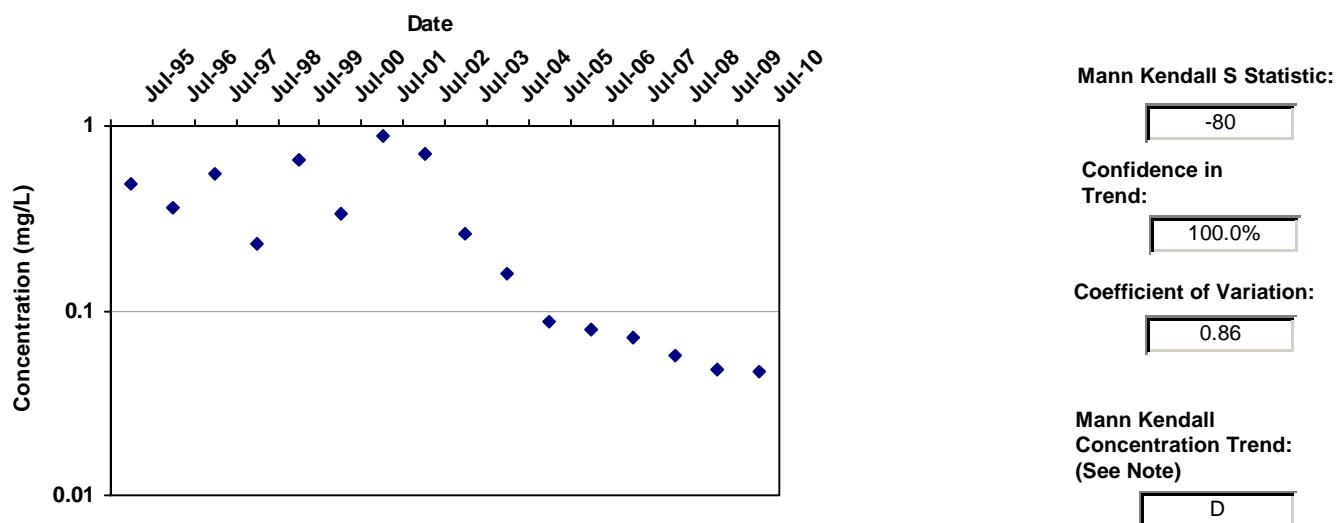
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-9C	T	7/1/1995	CHROMIUM, HEXAVALENT	2.5E-03	ND	2	0
MW-9C	T	7/1/1996	CHROMIUM, HEXAVALENT	2.5E-03	ND	2	0
MW-9C	T	7/1/1997	CHROMIUM, HEXAVALENT	3.3E-03		2	1
MW-9C	T	7/1/1998	CHROMIUM, HEXAVALENT	4.1E-03		1	1
MW-9C	T	7/1/2004	CHROMIUM, HEXAVALENT	1.3E-02		1	1
MW-9C	T	7/1/2009	CHROMIUM, HEXAVALENT	6.5E-02		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-10B  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

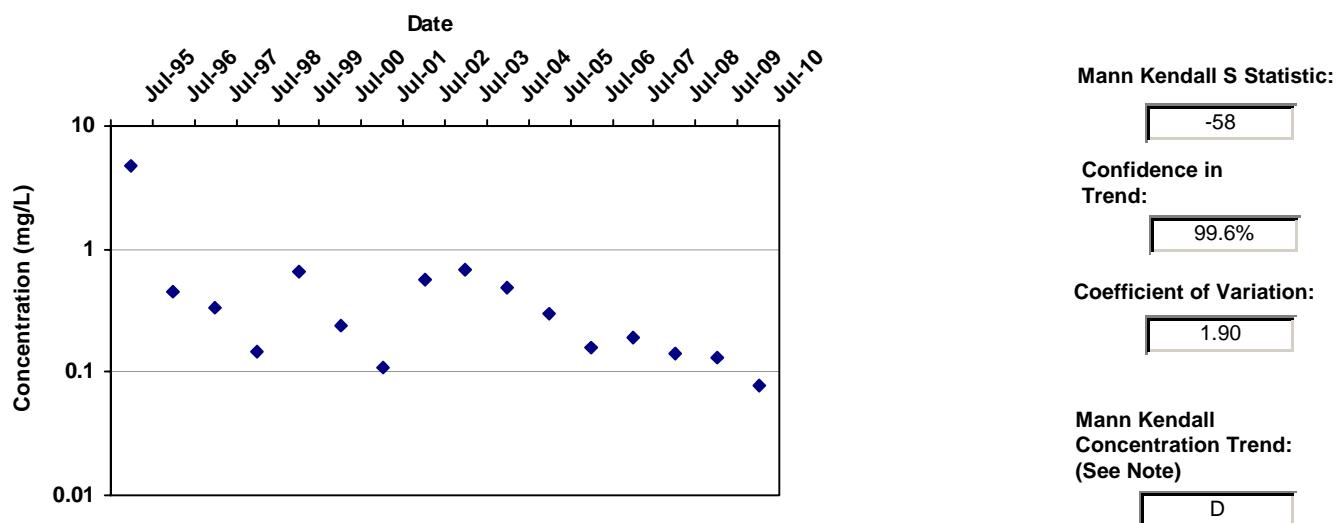
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-10B	T	7/1/1995	CHROMIUM, HEXAVALENT	4.9E-01		11	11
MW-10B	T	7/1/1996	CHROMIUM, HEXAVALENT	3.6E-01		2	2
MW-10B	T	7/1/1997	CHROMIUM, HEXAVALENT	5.5E-01		2	2
MW-10B	T	7/1/1998	CHROMIUM, HEXAVALENT	2.3E-01		2	2
MW-10B	T	7/1/1999	CHROMIUM, HEXAVALENT	6.6E-01		2	2
MW-10B	T	7/1/2000	CHROMIUM, HEXAVALENT	3.3E-01		2	2
MW-10B	T	7/1/2001	CHROMIUM, HEXAVALENT	8.9E-01		2	2
MW-10B	T	7/1/2002	CHROMIUM, HEXAVALENT	7.0E-01		3	3
MW-10B	T	7/1/2003	CHROMIUM, HEXAVALENT	2.6E-01		3	3
MW-10B	T	7/1/2004	CHROMIUM, HEXAVALENT	1.6E-01		2	2
MW-10B	T	7/1/2005	CHROMIUM, HEXAVALENT	8.7E-02		1	1
MW-10B	T	7/1/2006	CHROMIUM, HEXAVALENT	7.9E-02		1	1
MW-10B	T	7/1/2007	CHROMIUM, HEXAVALENT	7.2E-02		2	2
MW-10B	T	7/1/2008	CHROMIUM, HEXAVALENT	5.8E-02		2	2
MW-10B	T	7/1/2009	CHROMIUM, HEXAVALENT	4.8E-02		2	2
MW-10B	T	7/1/2010	CHROMIUM, HEXAVALENT	4.7E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-10C  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

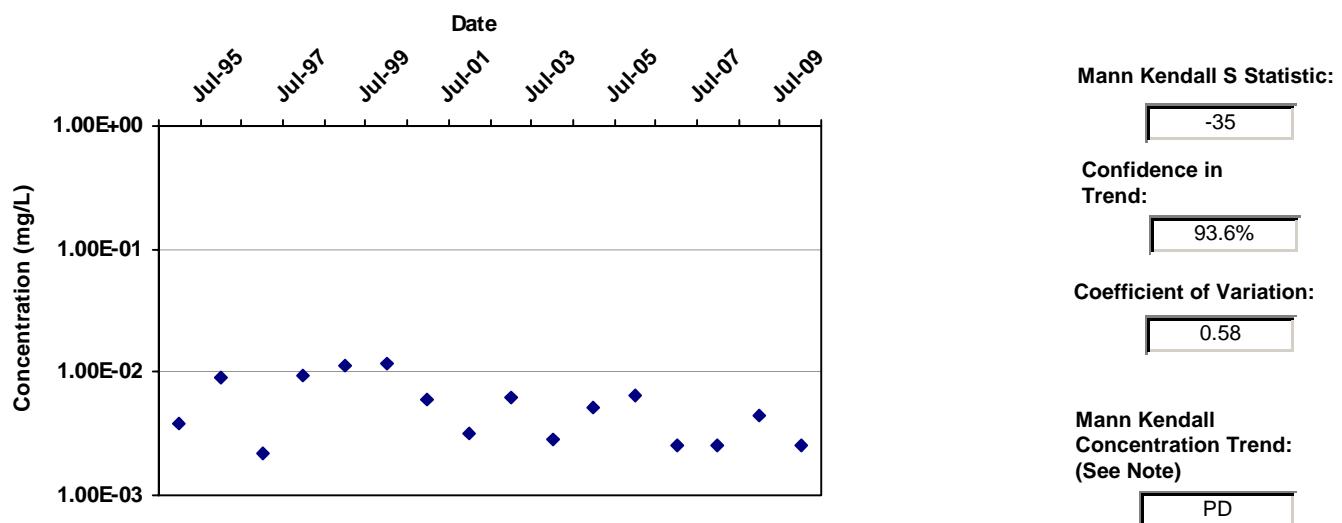
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-10C	T	7/1/1995	CHROMIUM, HEXAVALENT	4.7E+00		11	11
MW-10C	T	7/1/1996	CHROMIUM, HEXAVALENT	4.5E-01		2	2
MW-10C	T	7/1/1997	CHROMIUM, HEXAVALENT	3.4E-01		2	2
MW-10C	T	7/1/1998	CHROMIUM, HEXAVALENT	1.5E-01		2	2
MW-10C	T	7/1/1999	CHROMIUM, HEXAVALENT	6.5E-01		2	2
MW-10C	T	7/1/2000	CHROMIUM, HEXAVALENT	2.4E-01		2	2
MW-10C	T	7/1/2001	CHROMIUM, HEXAVALENT	1.1E-01		2	2
MW-10C	T	7/1/2002	CHROMIUM, HEXAVALENT	5.7E-01		3	3
MW-10C	T	7/1/2003	CHROMIUM, HEXAVALENT	6.9E-01		3	3
MW-10C	T	7/1/2004	CHROMIUM, HEXAVALENT	4.8E-01		2	2
MW-10C	T	7/1/2005	CHROMIUM, HEXAVALENT	3.0E-01		2	2
MW-10C	T	7/1/2006	CHROMIUM, HEXAVALENT	1.6E-01		2	2
MW-10C	T	7/1/2007	CHROMIUM, HEXAVALENT	1.9E-01		2	2
MW-10C	T	7/1/2008	CHROMIUM, HEXAVALENT	1.4E-01		2	2
MW-10C	T	7/1/2009	CHROMIUM, HEXAVALENT	1.3E-01		2	2
MW-10C	T	7/1/2010	CHROMIUM, HEXAVALENT	7.7E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-12C  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

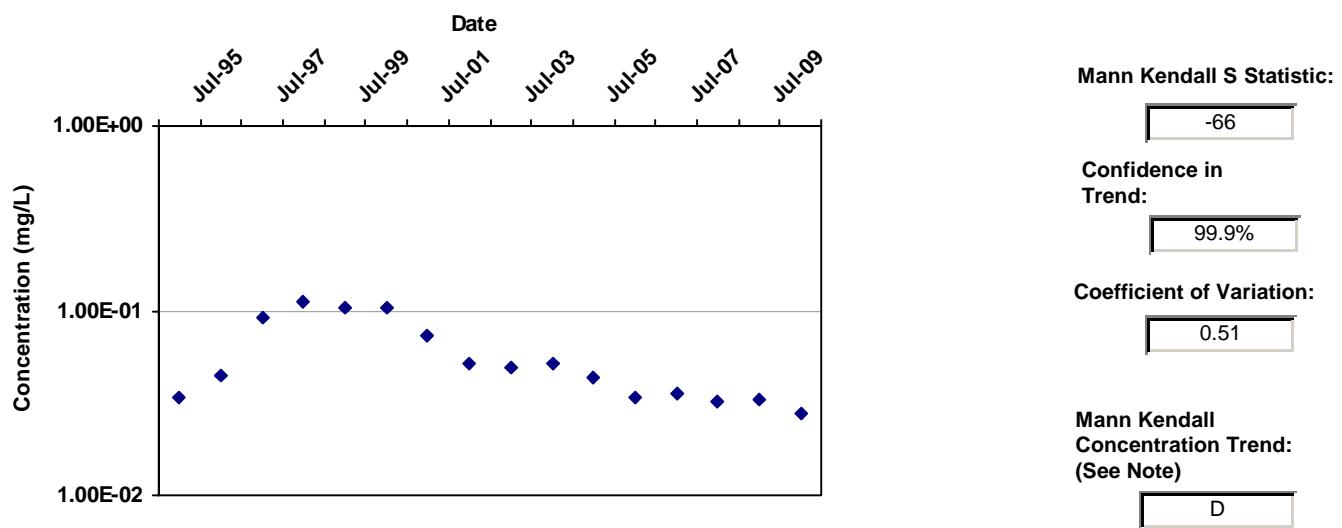
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-12C	T	7/1/1995	CHROMIUM, HEXAVALENT	3.9E-03		2	1
MW-12C	T	7/1/1996	CHROMIUM, HEXAVALENT	9.0E-03		2	2
MW-12C	T	7/1/1997	CHROMIUM, HEXAVALENT	2.2E-03		2	0
MW-12C	T	7/1/1998	CHROMIUM, HEXAVALENT	9.4E-03		2	2
MW-12C	T	7/1/1999	CHROMIUM, HEXAVALENT	1.1E-02		2	2
MW-12C	T	7/1/2000	CHROMIUM, HEXAVALENT	1.2E-02		2	2
MW-12C	T	7/1/2001	CHROMIUM, HEXAVALENT	6.1E-03		1	1
MW-12C	T	7/1/2002	CHROMIUM, HEXAVALENT	3.2E-03		1	1
MW-12C	T	7/1/2003	CHROMIUM, HEXAVALENT	6.3E-03		2	2
MW-12C	T	7/1/2004	CHROMIUM, HEXAVALENT	2.9E-03		2	1
MW-12C	T	7/1/2005	CHROMIUM, HEXAVALENT	5.2E-03		1	1
MW-12C	T	7/1/2006	CHROMIUM, HEXAVALENT	6.5E-03		1	1
MW-12C	T	7/1/2007	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0
MW-12C	T	7/1/2008	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0
MW-12C	T	7/1/2009	CHROMIUM, HEXAVALENT	4.5E-03		1	1
MW-12C	T	7/1/2010	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-13C  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

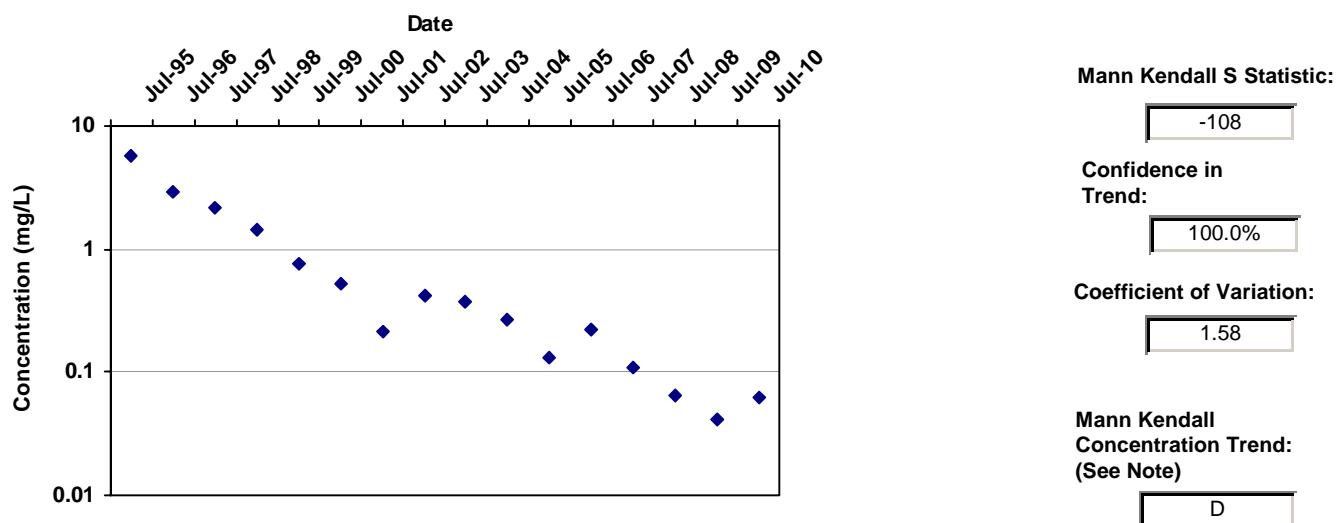
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-13C	T	7/1/1995	CHROMIUM, HEXAVALENT	3.4E-02		2	2
MW-13C	T	7/1/1996	CHROMIUM, HEXAVALENT	4.5E-02		2	2
MW-13C	T	7/1/1997	CHROMIUM, HEXAVALENT	9.1E-02		2	2
MW-13C	T	7/1/1998	CHROMIUM, HEXAVALENT	1.1E-01		2	2
MW-13C	T	7/1/1999	CHROMIUM, HEXAVALENT	1.0E-01		2	2
MW-13C	T	7/1/2000	CHROMIUM, HEXAVALENT	1.0E-01		2	2
MW-13C	T	7/1/2001	CHROMIUM, HEXAVALENT	7.3E-02		2	2
MW-13C	T	7/1/2002	CHROMIUM, HEXAVALENT	5.2E-02		2	2
MW-13C	T	7/1/2003	CHROMIUM, HEXAVALENT	5.0E-02		2	2
MW-13C	T	7/1/2004	CHROMIUM, HEXAVALENT	5.2E-02		2	2
MW-13C	T	7/1/2005	CHROMIUM, HEXAVALENT	4.4E-02		1	1
MW-13C	T	7/1/2006	CHROMIUM, HEXAVALENT	3.4E-02		1	1
MW-13C	T	7/1/2007	CHROMIUM, HEXAVALENT	3.5E-02		1	1
MW-13C	T	7/1/2008	CHROMIUM, HEXAVALENT	3.2E-02		1	1
MW-13C	T	7/1/2009	CHROMIUM, HEXAVALENT	3.3E-02		1	1
MW-13C	T	7/1/2010	CHROMIUM, HEXAVALENT	2.8E-02		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** PW-1B  
**Well Type:** S  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
PW-1B	S	7/1/1995	CHROMIUM, HEXAVALENT	5.8E+00		11	11
PW-1B	S	7/1/1996	CHROMIUM, HEXAVALENT	3.0E+00		12	12
PW-1B	S	7/1/1997	CHROMIUM, HEXAVALENT	2.1E+00		9	9
PW-1B	S	7/1/1998	CHROMIUM, HEXAVALENT	1.4E+00		3	3
PW-1B	S	7/1/1999	CHROMIUM, HEXAVALENT	7.6E-01		2	2
PW-1B	S	7/1/2000	CHROMIUM, HEXAVALENT	5.2E-01		3	3
PW-1B	S	7/1/2001	CHROMIUM, HEXAVALENT	2.1E-01		3	3
PW-1B	S	7/1/2002	CHROMIUM, HEXAVALENT	4.2E-01		4	4
PW-1B	S	7/1/2003	CHROMIUM, HEXAVALENT	3.8E-01		3	3
PW-1B	S	7/1/2004	CHROMIUM, HEXAVALENT	2.7E-01		2	2
PW-1B	S	7/1/2005	CHROMIUM, HEXAVALENT	1.3E-01		2	2
PW-1B	S	7/1/2006	CHROMIUM, HEXAVALENT	2.2E-01		2	2
PW-1B	S	7/1/2007	CHROMIUM, HEXAVALENT	1.1E-01		2	2
PW-1B	S	7/1/2008	CHROMIUM, HEXAVALENT	6.4E-02		2	2
PW-1B	S	7/1/2009	CHROMIUM, HEXAVALENT	4.2E-02		2	2
PW-1B	S	7/1/2010	CHROMIUM, HEXAVALENT	6.3E-02		2	2

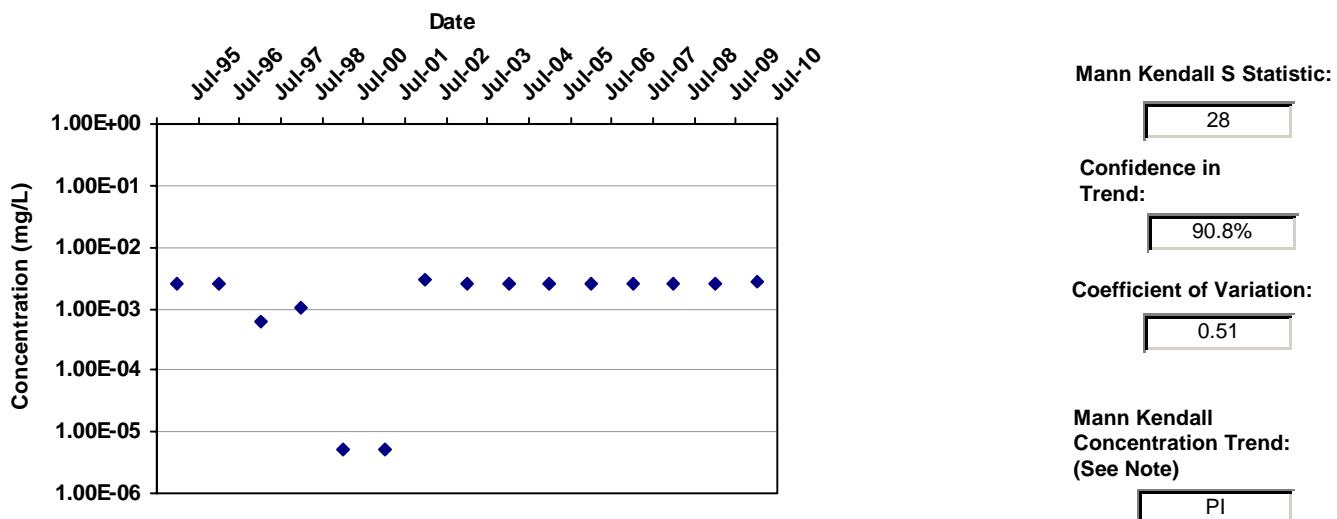
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

## **INTERMEDIATE WELLS**

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-16  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

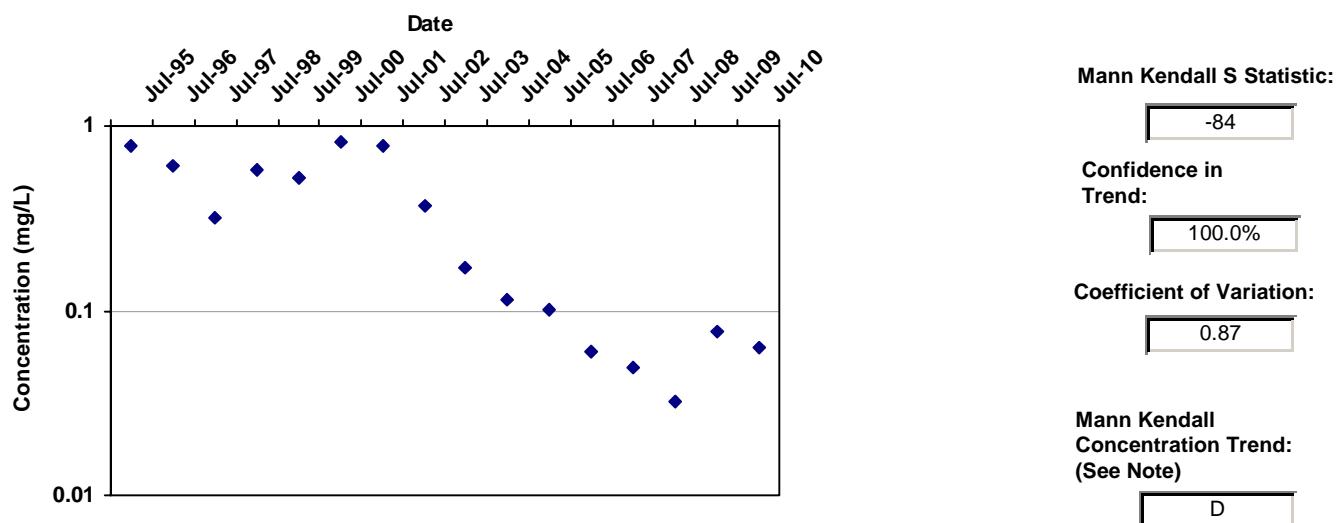
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-16	T	7/1/1995	CHROMIUM, HEXAVALENT	2.5E-03	ND	2	0
AMW-16	T	7/1/1996	CHROMIUM, HEXAVALENT	2.5E-03	ND	2	0
AMW-16	T	7/1/1997	CHROMIUM, HEXAVALENT	6.1E-04	ND	2	0
AMW-16	T	7/1/1998	CHROMIUM, HEXAVALENT	1.0E-03		2	1
AMW-16	T	7/1/2000	CHROMIUM, HEXAVALENT	5.0E-06	ND	2	0
AMW-16	T	7/1/2001	CHROMIUM, HEXAVALENT	5.0E-06	ND	1	0
AMW-16	T	7/1/2002	CHROMIUM, HEXAVALENT	3.0E-03		1	1
AMW-16	T	7/1/2003	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0
AMW-16	T	7/1/2004	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0
AMW-16	T	7/1/2005	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0
AMW-16	T	7/1/2006	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0
AMW-16	T	7/1/2007	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0
AMW-16	T	7/1/2008	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0
AMW-16	T	7/1/2009	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0
AMW-16	T	7/1/2010	CHROMIUM, HEXAVALENT	2.8E-03		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** CPU-14  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

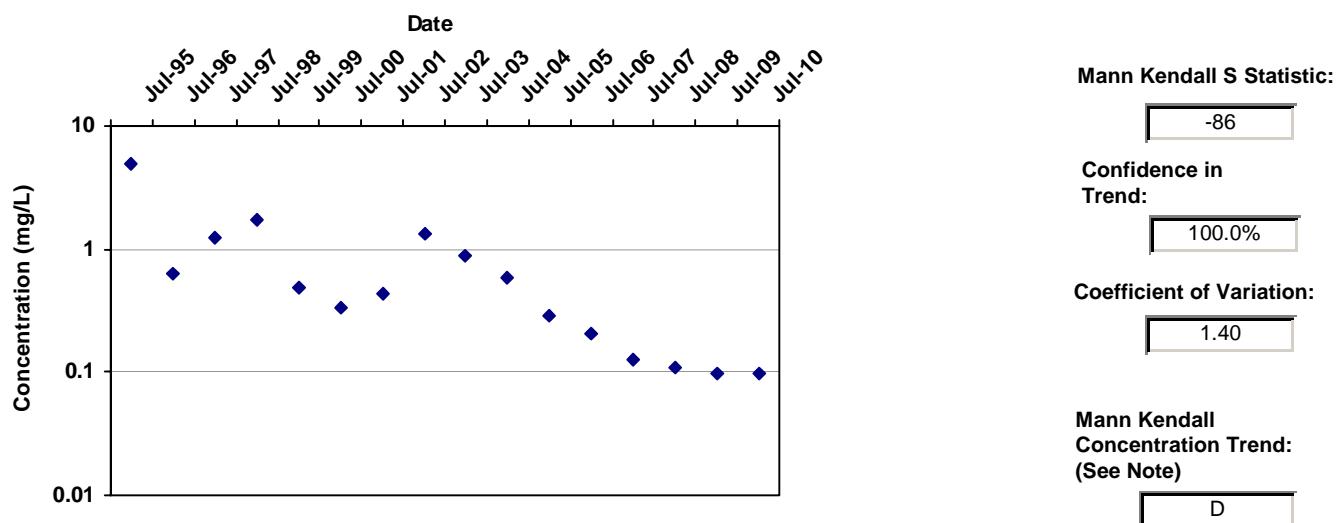
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
CPU-14	T	7/1/1995	CHROMIUM, HEXAVALENT	7.8E-01		2	2
CPU-14	T	7/1/1996	CHROMIUM, HEXAVALENT	6.0E-01		2	2
CPU-14	T	7/1/1997	CHROMIUM, HEXAVALENT	3.2E-01		1	1
CPU-14	T	7/1/1998	CHROMIUM, HEXAVALENT	5.8E-01		2	2
CPU-14	T	7/1/1999	CHROMIUM, HEXAVALENT	5.2E-01		2	2
CPU-14	T	7/1/2000	CHROMIUM, HEXAVALENT	8.3E-01		2	2
CPU-14	T	7/1/2001	CHROMIUM, HEXAVALENT	7.7E-01		2	2
CPU-14	T	7/1/2002	CHROMIUM, HEXAVALENT	3.7E-01		2	2
CPU-14	T	7/1/2003	CHROMIUM, HEXAVALENT	1.7E-01		2	2
CPU-14	T	7/1/2004	CHROMIUM, HEXAVALENT	1.2E-01		2	2
CPU-14	T	7/1/2005	CHROMIUM, HEXAVALENT	1.0E-01		2	2
CPU-14	T	7/1/2006	CHROMIUM, HEXAVALENT	6.1E-02		1	1
CPU-14	T	7/1/2007	CHROMIUM, HEXAVALENT	5.0E-02		1	1
CPU-14	T	7/1/2008	CHROMIUM, HEXAVALENT	3.2E-02		1	1
CPU-14	T	7/1/2009	CHROMIUM, HEXAVALENT	7.7E-02		1	1
CPU-14	T	7/1/2010	CHROMIUM, HEXAVALENT	6.3E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-14C  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

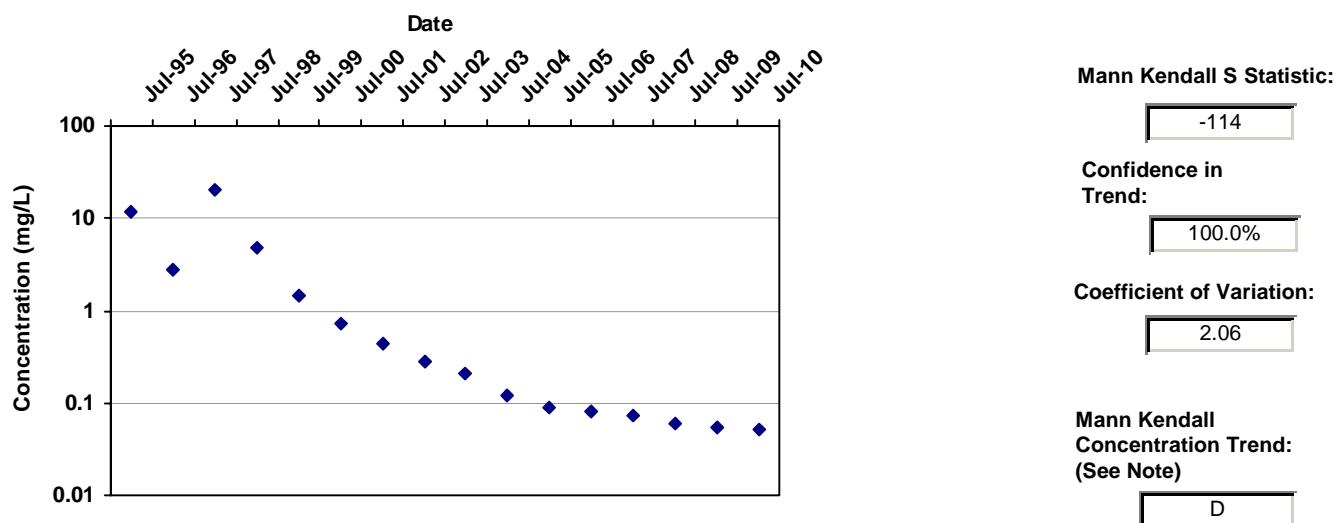
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-14C	T	7/1/1995	CHROMIUM, HEXAVALENT	4.8E+00		11	11
MW-14C	T	7/1/1996	CHROMIUM, HEXAVALENT	6.4E-01		2	2
MW-14C	T	7/1/1997	CHROMIUM, HEXAVALENT	1.3E+00		6	6
MW-14C	T	7/1/1998	CHROMIUM, HEXAVALENT	1.7E+00		2	2
MW-14C	T	7/1/1999	CHROMIUM, HEXAVALENT	4.9E-01		2	2
MW-14C	T	7/1/2000	CHROMIUM, HEXAVALENT	3.4E-01		3	3
MW-14C	T	7/1/2001	CHROMIUM, HEXAVALENT	4.3E-01		3	3
MW-14C	T	7/1/2002	CHROMIUM, HEXAVALENT	1.3E+00		4	4
MW-14C	T	7/1/2003	CHROMIUM, HEXAVALENT	8.7E-01		3	3
MW-14C	T	7/1/2004	CHROMIUM, HEXAVALENT	5.9E-01		2	2
MW-14C	T	7/1/2005	CHROMIUM, HEXAVALENT	2.9E-01		2	2
MW-14C	T	7/1/2006	CHROMIUM, HEXAVALENT	2.1E-01		2	2
MW-14C	T	7/1/2007	CHROMIUM, HEXAVALENT	1.3E-01		2	2
MW-14C	T	7/1/2008	CHROMIUM, HEXAVALENT	1.1E-01		2	2
MW-14C	T	7/1/2009	CHROMIUM, HEXAVALENT	9.7E-02		2	2
MW-14C	T	7/1/2010	CHROMIUM, HEXAVALENT	9.8E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-14E  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

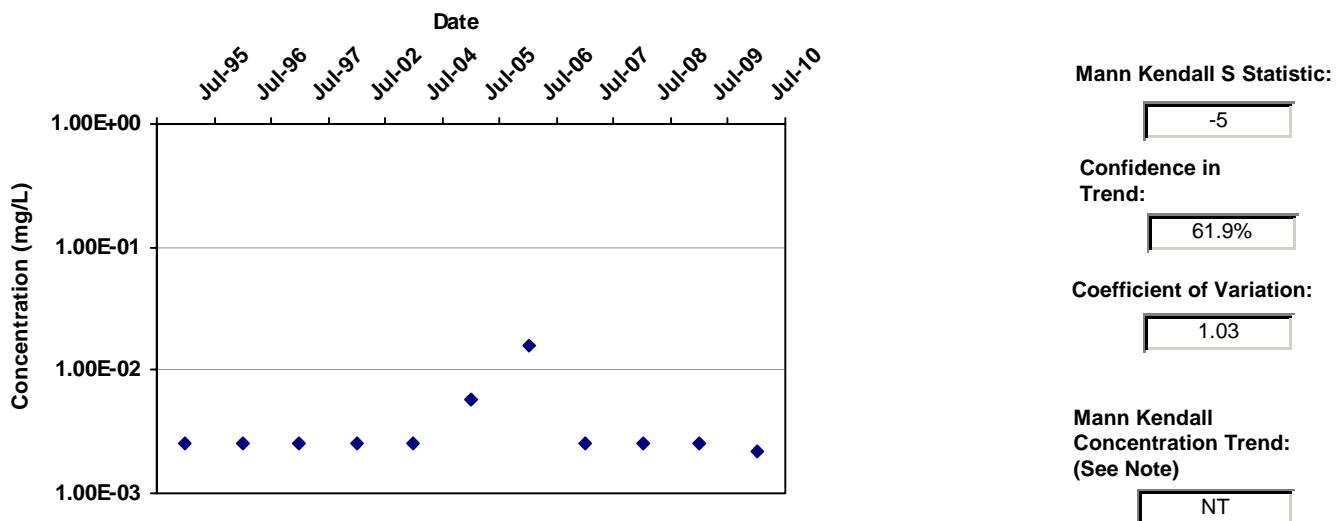
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-14E	T	7/1/1995	CHROMIUM, HEXAVALENT	1.2E+01		11	11
MW-14E	T	7/1/1996	CHROMIUM, HEXAVALENT	2.7E+00		2	2
MW-14E	T	7/1/1997	CHROMIUM, HEXAVALENT	2.1E+01		2	2
MW-14E	T	7/1/1998	CHROMIUM, HEXAVALENT	4.9E+00		3	3
MW-14E	T	7/1/1999	CHROMIUM, HEXAVALENT	1.5E+00		2	2
MW-14E	T	7/1/2000	CHROMIUM, HEXAVALENT	7.4E-01		3	3
MW-14E	T	7/1/2001	CHROMIUM, HEXAVALENT	4.4E-01		3	3
MW-14E	T	7/1/2002	CHROMIUM, HEXAVALENT	2.8E-01		4	4
MW-14E	T	7/1/2003	CHROMIUM, HEXAVALENT	2.1E-01		3	3
MW-14E	T	7/1/2004	CHROMIUM, HEXAVALENT	1.2E-01		2	2
MW-14E	T	7/1/2005	CHROMIUM, HEXAVALENT	9.0E-02		2	2
MW-14E	T	7/1/2006	CHROMIUM, HEXAVALENT	8.1E-02		2	2
MW-14E	T	7/1/2007	CHROMIUM, HEXAVALENT	7.3E-02		2	2
MW-14E	T	7/1/2008	CHROMIUM, HEXAVALENT	6.1E-02		2	2
MW-14E	T	7/1/2009	CHROMIUM, HEXAVALENT	5.4E-02		2	2
MW-14E	T	7/1/2010	CHROMIUM, HEXAVALENT	5.2E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-16E  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

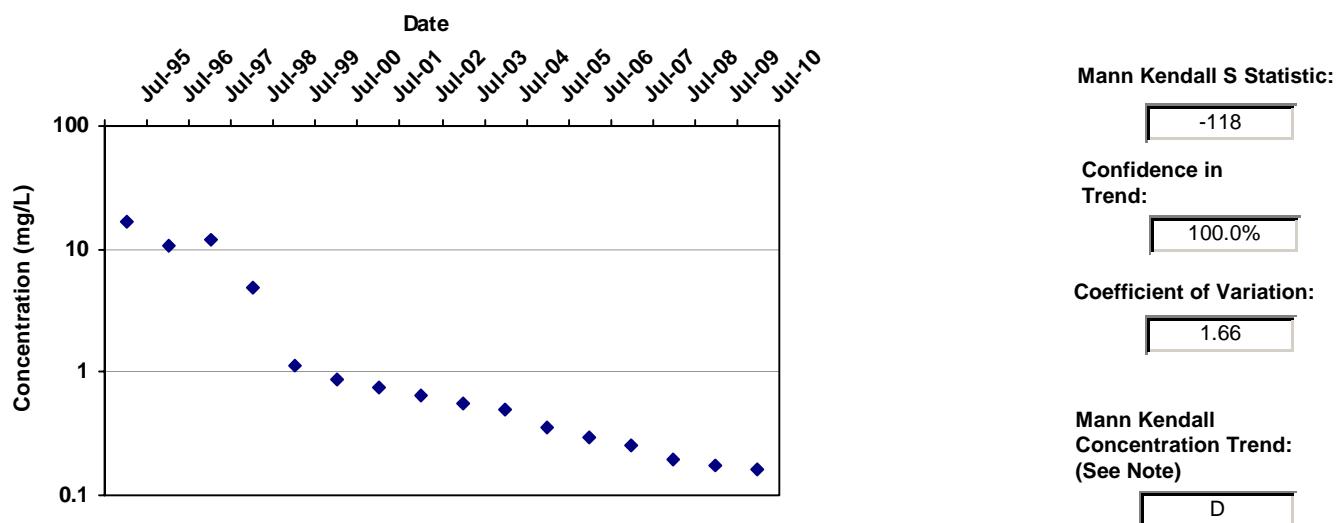
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-16E	T	7/1/1995	CHROMIUM, HEXAVALENT	2.5E-03	ND	2	0
MW-16E	T	7/1/1996	CHROMIUM, HEXAVALENT	2.5E-03	ND	2	0
MW-16E	T	7/1/1997	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0
MW-16E	T	7/1/2002	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0
MW-16E	T	7/1/2004	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0
MW-16E	T	7/1/2005	CHROMIUM, HEXAVALENT	5.8E-03		1	1
MW-16E	T	7/1/2006	CHROMIUM, HEXAVALENT	1.6E-02		1	1
MW-16E	T	7/1/2007	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0
MW-16E	T	7/1/2008	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0
MW-16E	T	7/1/2009	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0
MW-16E	T	7/1/2010	CHROMIUM, HEXAVALENT	2.2E-03		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-18D  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

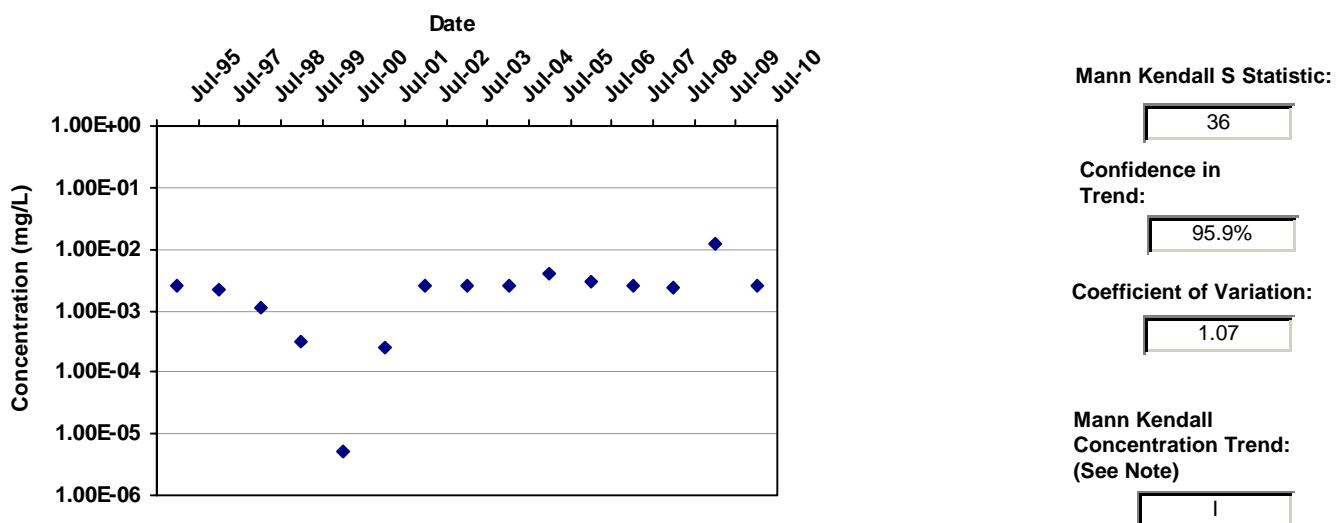
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-18D	T	7/1/1995	CHROMIUM, HEXAVALENT	1.7E+01		11	11
MW-18D	T	7/1/1996	CHROMIUM, HEXAVALENT	1.1E+01		8	8
MW-18D	T	7/1/1997	CHROMIUM, HEXAVALENT	1.2E+01		9	9
MW-18D	T	7/1/1998	CHROMIUM, HEXAVALENT	4.9E+00		3	3
MW-18D	T	7/1/1999	CHROMIUM, HEXAVALENT	1.1E+00		2	2
MW-18D	T	7/1/2000	CHROMIUM, HEXAVALENT	8.8E-01		3	3
MW-18D	T	7/1/2001	CHROMIUM, HEXAVALENT	7.6E-01		2	2
MW-18D	T	7/1/2002	CHROMIUM, HEXAVALENT	6.4E-01		4	4
MW-18D	T	7/1/2003	CHROMIUM, HEXAVALENT	5.5E-01		3	3
MW-18D	T	7/1/2004	CHROMIUM, HEXAVALENT	5.0E-01		2	2
MW-18D	T	7/1/2005	CHROMIUM, HEXAVALENT	3.6E-01		2	2
MW-18D	T	7/1/2006	CHROMIUM, HEXAVALENT	3.0E-01		2	2
MW-18D	T	7/1/2007	CHROMIUM, HEXAVALENT	2.6E-01		2	2
MW-18D	T	7/1/2008	CHROMIUM, HEXAVALENT	1.9E-01		2	2
MW-18D	T	7/1/2009	CHROMIUM, HEXAVALENT	1.7E-01		2	2
MW-18D	T	7/1/2010	CHROMIUM, HEXAVALENT	1.6E-01		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-18E  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

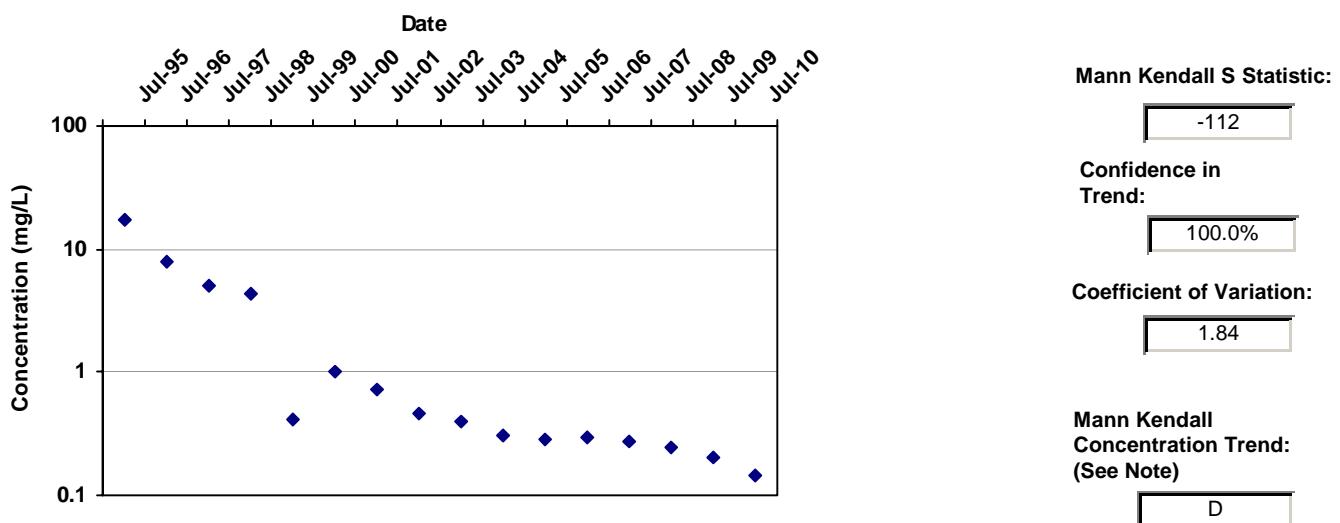
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-18E	T	7/1/1995	CHROMIUM, HEXAVALENT	2.5E-03	ND	2	0
MW-18E	T	7/1/1997	CHROMIUM, HEXAVALENT	2.2E-03	ND	2	0
MW-18E	T	7/1/1998	CHROMIUM, HEXAVALENT	1.1E-03		2	2
MW-18E	T	7/1/1999	CHROMIUM, HEXAVALENT	3.1E-04		2	1
MW-18E	T	7/1/2000	CHROMIUM, HEXAVALENT	5.0E-06	ND	2	0
MW-18E	T	7/1/2001	CHROMIUM, HEXAVALENT	2.5E-04		3	1
MW-18E	T	7/1/2002	CHROMIUM, HEXAVALENT	2.5E-03	ND	2	0
MW-18E	T	7/1/2003	CHROMIUM, HEXAVALENT	2.5E-03	ND	2	0
MW-18E	T	7/1/2004	CHROMIUM, HEXAVALENT	2.5E-03	ND	2	0
MW-18E	T	7/1/2005	CHROMIUM, HEXAVALENT	4.1E-03		1	1
MW-18E	T	7/1/2006	CHROMIUM, HEXAVALENT	3.0E-03		2	1
MW-18E	T	7/1/2007	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0
MW-18E	T	7/1/2008	CHROMIUM, HEXAVALENT	2.4E-03		1	1
MW-18E	T	7/1/2009	CHROMIUM, HEXAVALENT	1.3E-02		1	1
MW-18E	T	7/1/2010	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-19D  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

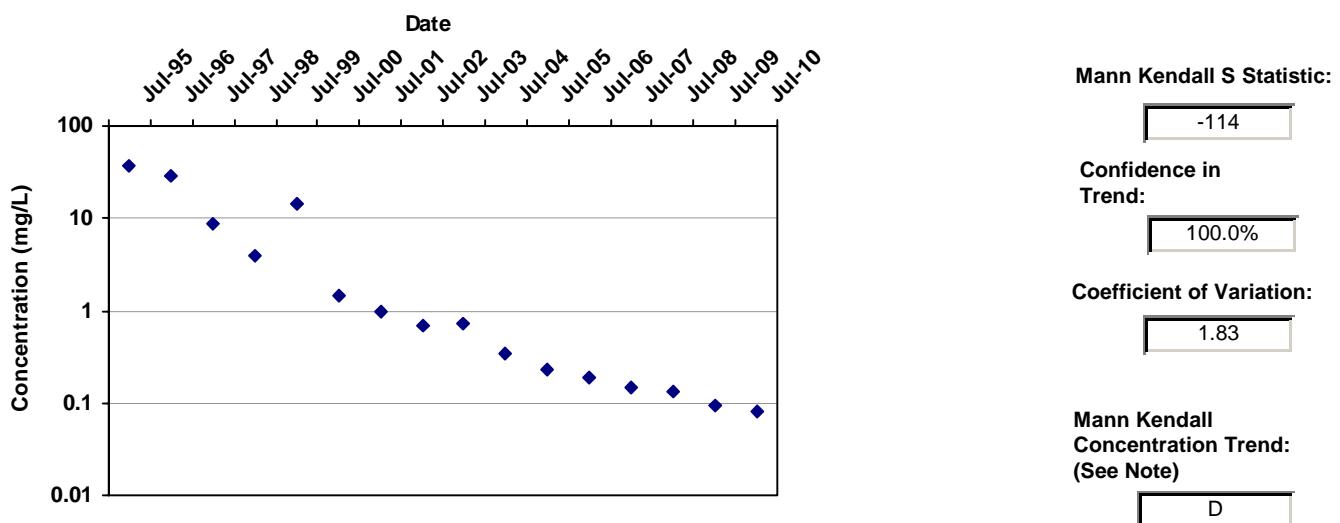
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-19D	T	7/1/1995	CHROMIUM, HEXAVALENT	1.7E+01		11	11
MW-19D	T	7/1/1996	CHROMIUM, HEXAVALENT	7.9E+00		12	12
MW-19D	T	7/1/1997	CHROMIUM, HEXAVALENT	5.0E+00		6	6
MW-19D	T	7/1/1998	CHROMIUM, HEXAVALENT	4.4E+00		3	3
MW-19D	T	7/1/1999	CHROMIUM, HEXAVALENT	4.1E-01		1	1
MW-19D	T	7/1/2000	CHROMIUM, HEXAVALENT	1.0E+00		3	3
MW-19D	T	7/1/2001	CHROMIUM, HEXAVALENT	7.3E-01		3	3
MW-19D	T	7/1/2002	CHROMIUM, HEXAVALENT	4.6E-01		4	4
MW-19D	T	7/1/2003	CHROMIUM, HEXAVALENT	4.0E-01		3	3
MW-19D	T	7/1/2004	CHROMIUM, HEXAVALENT	3.0E-01		2	2
MW-19D	T	7/1/2005	CHROMIUM, HEXAVALENT	2.8E-01		2	2
MW-19D	T	7/1/2006	CHROMIUM, HEXAVALENT	2.9E-01		2	2
MW-19D	T	7/1/2007	CHROMIUM, HEXAVALENT	2.7E-01		2	2
MW-19D	T	7/1/2008	CHROMIUM, HEXAVALENT	2.5E-01		2	2
MW-19D	T	7/1/2009	CHROMIUM, HEXAVALENT	2.0E-01		2	2
MW-19D	T	7/1/2010	CHROMIUM, HEXAVALENT	1.5E-01		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-20D  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-20D	T	7/1/1995	CHROMIUM, HEXAVALENT	3.6E+01		11	11
MW-20D	T	7/1/1996	CHROMIUM, HEXAVALENT	2.9E+01		12	12
MW-20D	T	7/1/1997	CHROMIUM, HEXAVALENT	8.7E+00		9	9
MW-20D	T	7/1/1998	CHROMIUM, HEXAVALENT	4.0E+00		3	3
MW-20D	T	7/1/1999	CHROMIUM, HEXAVALENT	1.5E+01		1	1
MW-20D	T	7/1/2000	CHROMIUM, HEXAVALENT	1.5E+00		3	3
MW-20D	T	7/1/2001	CHROMIUM, HEXAVALENT	9.6E-01		3	3
MW-20D	T	7/1/2002	CHROMIUM, HEXAVALENT	6.9E-01		4	4
MW-20D	T	7/1/2003	CHROMIUM, HEXAVALENT	7.4E-01		3	3
MW-20D	T	7/1/2004	CHROMIUM, HEXAVALENT	3.5E-01		2	2
MW-20D	T	7/1/2005	CHROMIUM, HEXAVALENT	2.3E-01		2	2
MW-20D	T	7/1/2006	CHROMIUM, HEXAVALENT	1.8E-01		2	2
MW-20D	T	7/1/2007	CHROMIUM, HEXAVALENT	1.5E-01		2	2
MW-20D	T	7/1/2008	CHROMIUM, HEXAVALENT	1.4E-01		2	2
MW-20D	T	7/1/2009	CHROMIUM, HEXAVALENT	9.4E-02		2	2
MW-20D	T	7/1/2010	CHROMIUM, HEXAVALENT	8.0E-02		2	2

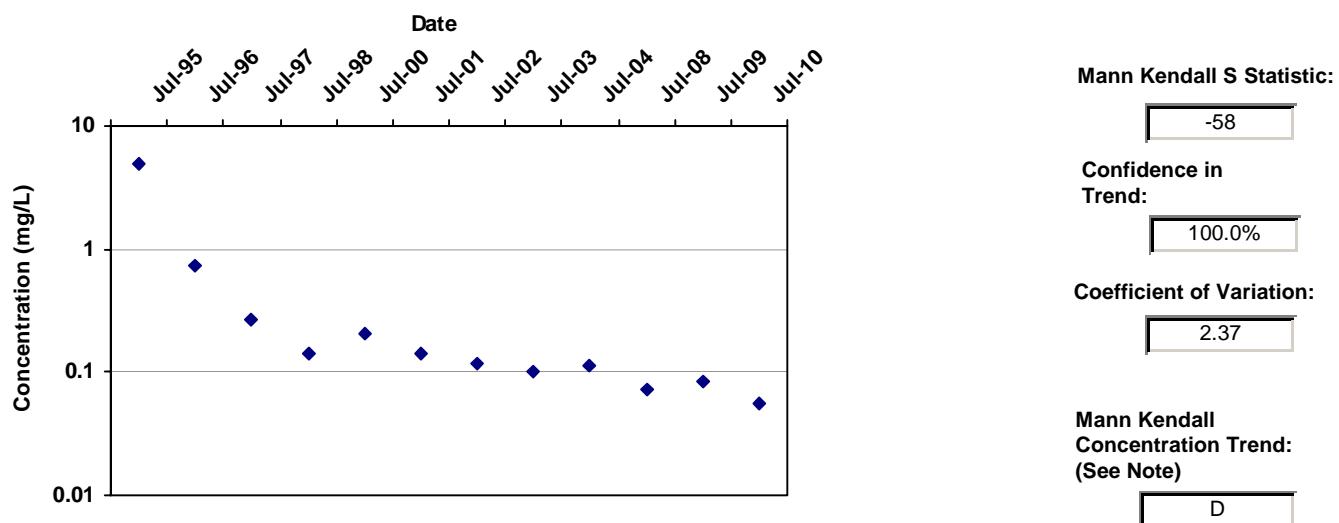
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

**CHURCH OF GOD WELLS**

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-14  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

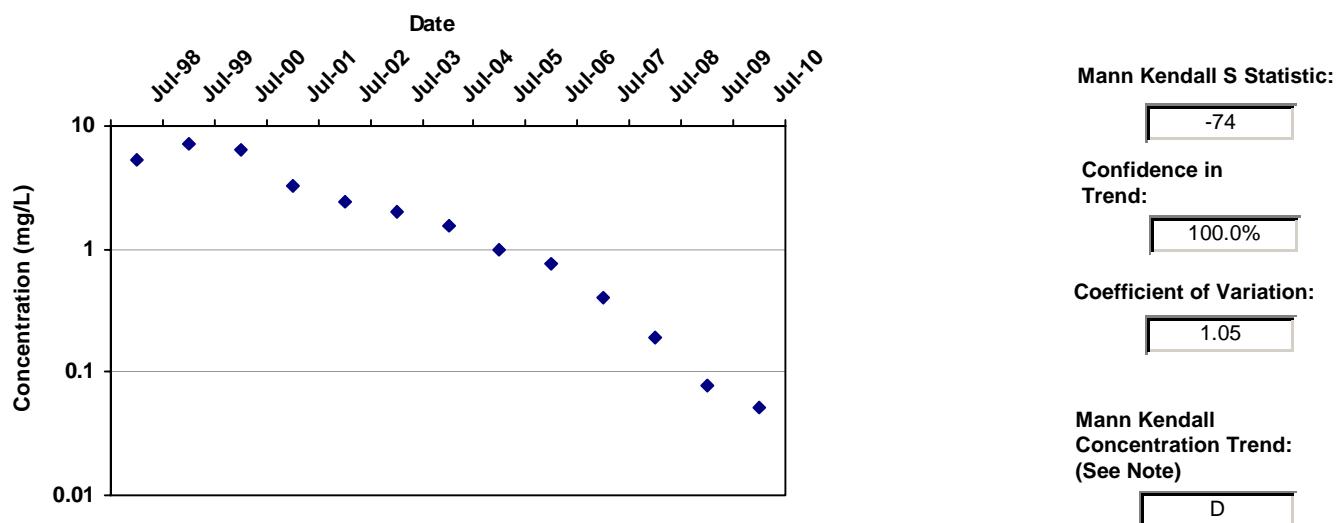
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-14	T	7/1/1995	CHROMIUM, HEXAVALENT	4.9E+00		2	2
AMW-14	T	7/1/1996	CHROMIUM, HEXAVALENT	7.4E-01		2	2
AMW-14	T	7/1/1997	CHROMIUM, HEXAVALENT	2.7E-01		2	2
AMW-14	T	7/1/1998	CHROMIUM, HEXAVALENT	1.4E-01		1	1
AMW-14	T	7/1/2000	CHROMIUM, HEXAVALENT	2.1E-01		1	1
AMW-14	T	7/1/2001	CHROMIUM, HEXAVALENT	1.4E-01		2	2
AMW-14	T	7/1/2002	CHROMIUM, HEXAVALENT	1.2E-01		2	2
AMW-14	T	7/1/2003	CHROMIUM, HEXAVALENT	1.0E-01		2	2
AMW-14	T	7/1/2004	CHROMIUM, HEXAVALENT	1.1E-01		1	1
AMW-14	T	7/1/2008	CHROMIUM, HEXAVALENT	7.2E-02		1	1
AMW-14	T	7/1/2009	CHROMIUM, HEXAVALENT	8.3E-02		1	1
AMW-14	T	7/1/2010	CHROMIUM, HEXAVALENT	5.5E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-27  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

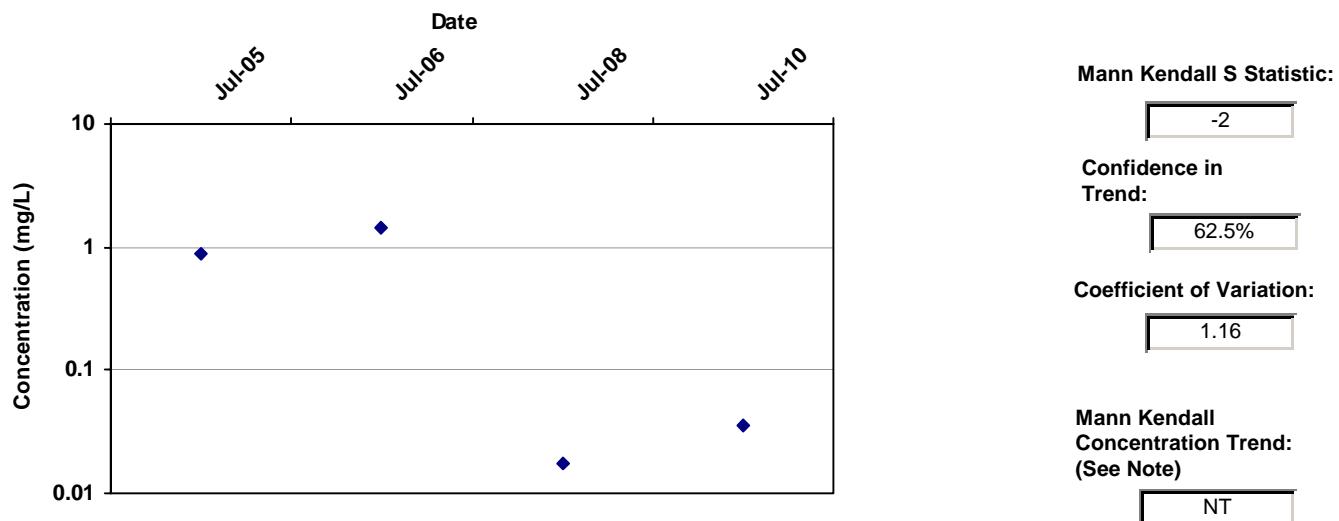
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-27	T	7/1/1998	CHROMIUM, HEXAVALENT	5.3E+00		1	1
AMW-27	T	7/1/1999	CHROMIUM, HEXAVALENT	7.2E+00		1	1
AMW-27	T	7/1/2000	CHROMIUM, HEXAVALENT	6.3E+00		3	3
AMW-27	T	7/1/2001	CHROMIUM, HEXAVALENT	3.2E+00		3	3
AMW-27	T	7/1/2002	CHROMIUM, HEXAVALENT	2.4E+00		4	4
AMW-27	T	7/1/2003	CHROMIUM, HEXAVALENT	2.0E+00		3	3
AMW-27	T	7/1/2004	CHROMIUM, HEXAVALENT	1.5E+00		2	2
AMW-27	T	7/1/2005	CHROMIUM, HEXAVALENT	9.8E-01		2	2
AMW-27	T	7/1/2006	CHROMIUM, HEXAVALENT	7.7E-01		2	2
AMW-27	T	7/1/2007	CHROMIUM, HEXAVALENT	4.0E-01		2	2
AMW-27	T	7/1/2008	CHROMIUM, HEXAVALENT	1.9E-01		2	2
AMW-27	T	7/1/2009	CHROMIUM, HEXAVALENT	7.9E-02		2	2
AMW-27	T	7/1/2010	CHROMIUM, HEXAVALENT	5.2E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-61  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

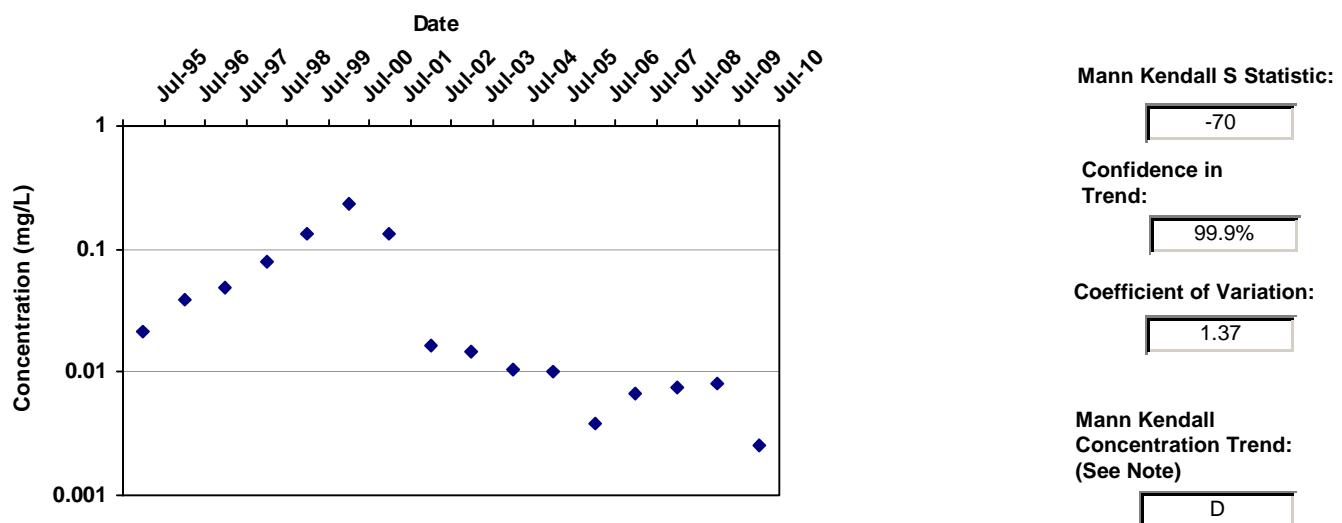
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-61	T	7/1/2005	CHROMIUM, HEXAVALENT	8.8E-01		2	2
AMW-61	T	7/1/2006	CHROMIUM, HEXAVALENT	1.4E+00		1	1
AMW-61	T	7/1/2008	CHROMIUM, HEXAVALENT	1.7E-02		1	1
AMW-61	T	7/1/2010	CHROMIUM, HEXAVALENT	3.5E-02		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** CPU-12  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

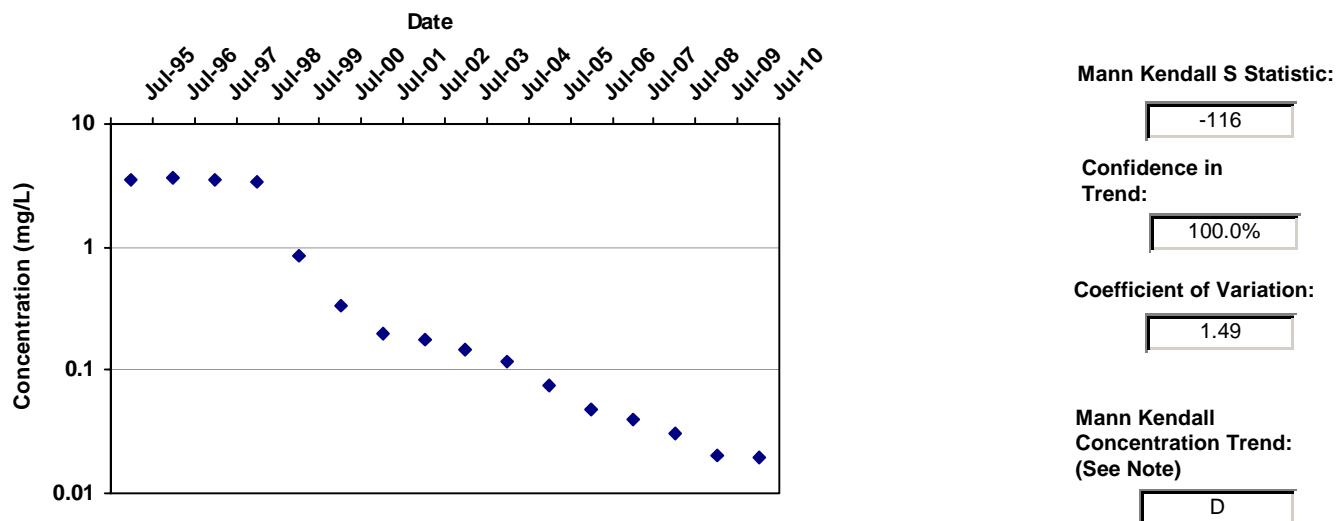
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
CPU-12	T	7/1/1995	CHROMIUM, HEXAVALENT	2.1E-02		2	2
CPU-12	T	7/1/1996	CHROMIUM, HEXAVALENT	3.8E-02		2	2
CPU-12	T	7/1/1997	CHROMIUM, HEXAVALENT	4.9E-02		2	2
CPU-12	T	7/1/1998	CHROMIUM, HEXAVALENT	8.0E-02		2	2
CPU-12	T	7/1/1999	CHROMIUM, HEXAVALENT	1.3E-01		2	2
CPU-12	T	7/1/2000	CHROMIUM, HEXAVALENT	2.3E-01		2	2
CPU-12	T	7/1/2001	CHROMIUM, HEXAVALENT	1.3E-01		2	2
CPU-12	T	7/1/2002	CHROMIUM, HEXAVALENT	1.7E-02		2	2
CPU-12	T	7/1/2003	CHROMIUM, HEXAVALENT	1.5E-02		2	2
CPU-12	T	7/1/2004	CHROMIUM, HEXAVALENT	1.0E-02		2	2
CPU-12	T	7/1/2005	CHROMIUM, HEXAVALENT	1.0E-02		2	2
CPU-12	T	7/1/2006	CHROMIUM, HEXAVALENT	3.8E-03		1	1
CPU-12	T	7/1/2007	CHROMIUM, HEXAVALENT	6.6E-03		1	1
CPU-12	T	7/1/2008	CHROMIUM, HEXAVALENT	7.6E-03		1	1
CPU-12	T	7/1/2009	CHROMIUM, HEXAVALENT	8.0E-03		1	1
CPU-12	T	7/1/2010	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** CPU-13  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

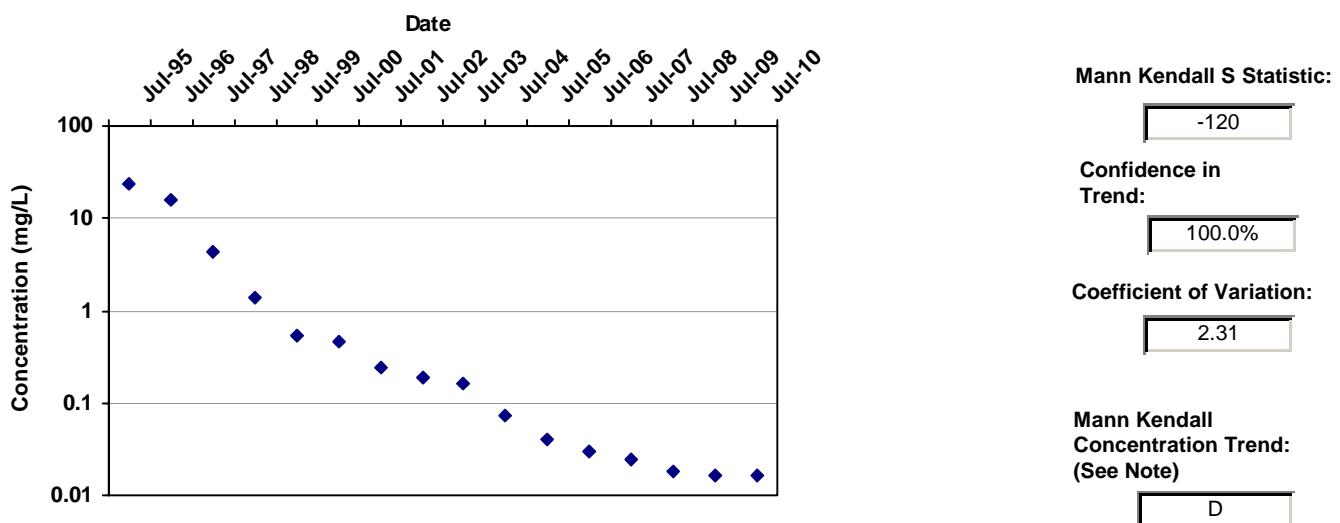
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
CPU-13	T	7/1/1995	CHROMIUM, HEXAVALENT	3.5E+00		11	11
CPU-13	T	7/1/1996	CHROMIUM, HEXAVALENT	3.6E+00		2	2
CPU-13	T	7/1/1997	CHROMIUM, HEXAVALENT	3.5E+00		2	2
CPU-13	T	7/1/1998	CHROMIUM, HEXAVALENT	3.3E+00		2	2
CPU-13	T	7/1/1999	CHROMIUM, HEXAVALENT	8.6E-01		2	2
CPU-13	T	7/1/2000	CHROMIUM, HEXAVALENT	3.4E-01		3	3
CPU-13	T	7/1/2001	CHROMIUM, HEXAVALENT	2.0E-01		3	3
CPU-13	T	7/1/2002	CHROMIUM, HEXAVALENT	1.8E-01		4	4
CPU-13	T	7/1/2003	CHROMIUM, HEXAVALENT	1.5E-01		3	3
CPU-13	T	7/1/2004	CHROMIUM, HEXAVALENT	1.2E-01		2	2
CPU-13	T	7/1/2005	CHROMIUM, HEXAVALENT	7.4E-02		2	2
CPU-13	T	7/1/2006	CHROMIUM, HEXAVALENT	4.9E-02		2	2
CPU-13	T	7/1/2007	CHROMIUM, HEXAVALENT	4.0E-02		2	2
CPU-13	T	7/1/2008	CHROMIUM, HEXAVALENT	3.0E-02		2	2
CPU-13	T	7/1/2009	CHROMIUM, HEXAVALENT	2.1E-02		2	2
CPU-13	T	7/1/2010	CHROMIUM, HEXAVALENT	2.0E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-21D  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

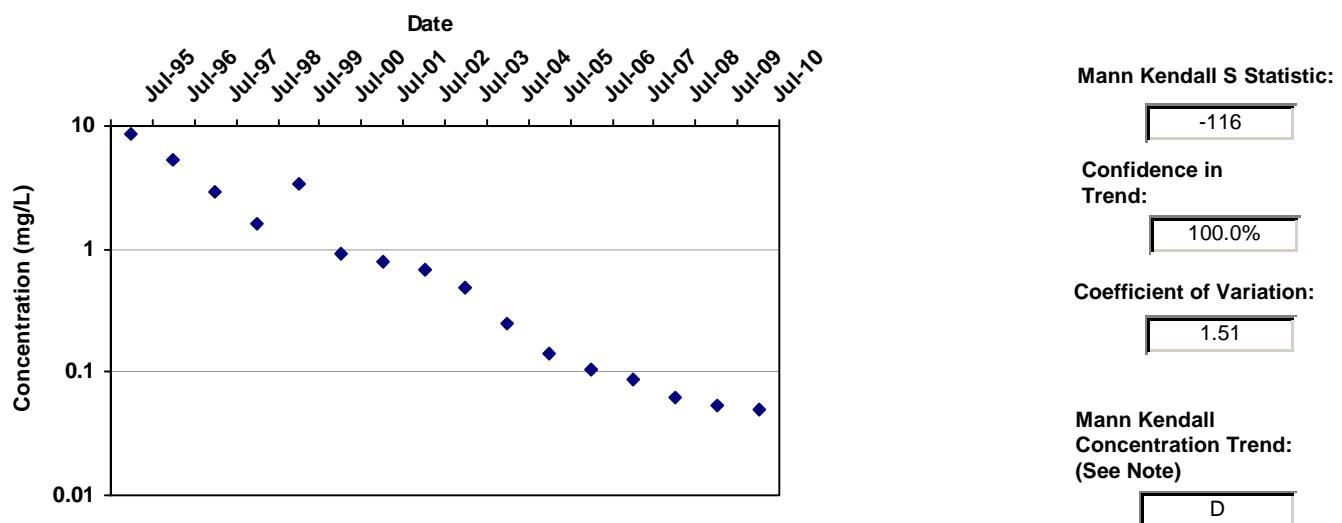
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-21D	T	7/1/1995	CHROMIUM, HEXAVALENT	2.4E+01		11	11
MW-21D	T	7/1/1996	CHROMIUM, HEXAVALENT	1.6E+01		12	12
MW-21D	T	7/1/1997	CHROMIUM, HEXAVALENT	4.4E+00		9	9
MW-21D	T	7/1/1998	CHROMIUM, HEXAVALENT	1.4E+00		3	3
MW-21D	T	7/1/1999	CHROMIUM, HEXAVALENT	5.3E-01		2	2
MW-21D	T	7/1/2000	CHROMIUM, HEXAVALENT	4.7E-01		3	3
MW-21D	T	7/1/2001	CHROMIUM, HEXAVALENT	2.4E-01		3	3
MW-21D	T	7/1/2002	CHROMIUM, HEXAVALENT	1.8E-01		4	4
MW-21D	T	7/1/2003	CHROMIUM, HEXAVALENT	1.6E-01		3	3
MW-21D	T	7/1/2004	CHROMIUM, HEXAVALENT	7.2E-02		2	2
MW-21D	T	7/1/2005	CHROMIUM, HEXAVALENT	4.0E-02		2	2
MW-21D	T	7/1/2006	CHROMIUM, HEXAVALENT	3.0E-02		2	2
MW-21D	T	7/1/2007	CHROMIUM, HEXAVALENT	2.5E-02		2	2
MW-21D	T	7/1/2008	CHROMIUM, HEXAVALENT	1.9E-02		2	2
MW-21D	T	7/1/2009	CHROMIUM, HEXAVALENT	1.7E-02		2	2
MW-21D	T	7/1/2010	CHROMIUM, HEXAVALENT	1.6E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-22D  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

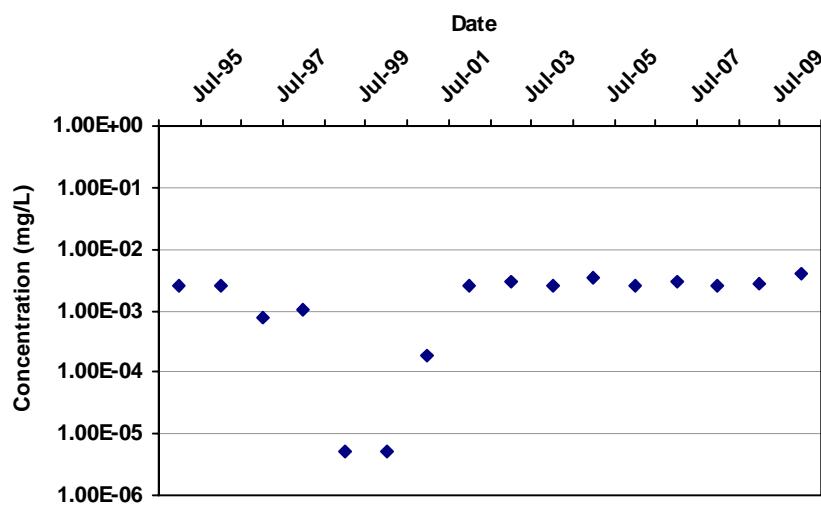
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-22D	T	7/1/1995	CHROMIUM, HEXAVALENT	8.6E+00		11	11
MW-22D	T	7/1/1996	CHROMIUM, HEXAVALENT	5.4E+00		11	11
MW-22D	T	7/1/1997	CHROMIUM, HEXAVALENT	2.9E+00		9	9
MW-22D	T	7/1/1998	CHROMIUM, HEXAVALENT	1.6E+00		3	3
MW-22D	T	7/1/1999	CHROMIUM, HEXAVALENT	3.4E+00		2	2
MW-22D	T	7/1/2000	CHROMIUM, HEXAVALENT	9.1E-01		3	3
MW-22D	T	7/1/2001	CHROMIUM, HEXAVALENT	7.8E-01		3	3
MW-22D	T	7/1/2002	CHROMIUM, HEXAVALENT	6.7E-01		4	4
MW-22D	T	7/1/2003	CHROMIUM, HEXAVALENT	4.9E-01		3	3
MW-22D	T	7/1/2004	CHROMIUM, HEXAVALENT	2.5E-01		2	2
MW-22D	T	7/1/2005	CHROMIUM, HEXAVALENT	1.4E-01		2	2
MW-22D	T	7/1/2006	CHROMIUM, HEXAVALENT	1.0E-01		2	2
MW-22D	T	7/1/2007	CHROMIUM, HEXAVALENT	8.7E-02		2	2
MW-22D	T	7/1/2008	CHROMIUM, HEXAVALENT	6.3E-02		2	2
MW-22D	T	7/1/2009	CHROMIUM, HEXAVALENT	5.3E-02		2	2
MW-22D	T	7/1/2010	CHROMIUM, HEXAVALENT	5.0E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-23D  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



**Mann Kendall S Statistic:**

50

**Confidence in Trend:**

98.7%

**Coefficient of Variation:**

0.61

**Mann Kendall Concentration Trend: (See Note)**

I

## Data Table:

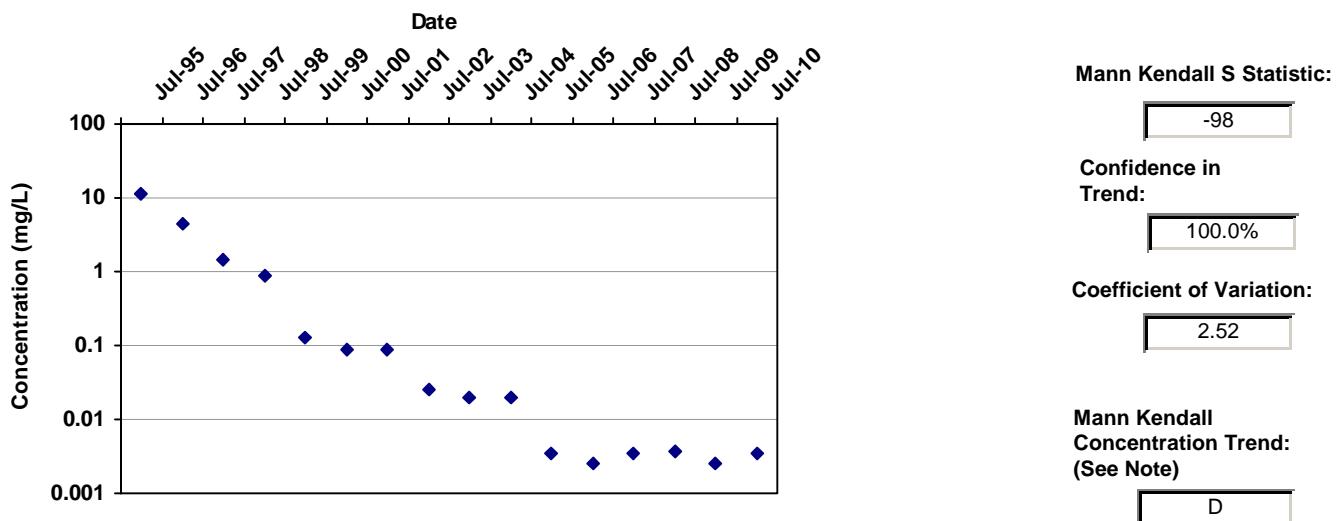
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-23D	T	7/1/1995	CHROMIUM, HEXAVALENT	2.5E-03	ND	2	0
MW-23D	T	7/1/1996	CHROMIUM, HEXAVALENT	2.5E-03	ND	2	0
MW-23D	T	7/1/1997	CHROMIUM, HEXAVALENT	7.9E-04	ND	2	0
MW-23D	T	7/1/1998	CHROMIUM, HEXAVALENT	1.0E-03		2	1
MW-23D	T	7/1/1999	CHROMIUM, HEXAVALENT	5.0E-06	ND	2	0
MW-23D	T	7/1/2000	CHROMIUM, HEXAVALENT	5.0E-06	ND	2	0
MW-23D	T	7/1/2001	CHROMIUM, HEXAVALENT	1.8E-04		2	1
MW-23D	T	7/1/2002	CHROMIUM, HEXAVALENT	2.5E-03	ND	2	0
MW-23D	T	7/1/2003	CHROMIUM, HEXAVALENT	3.0E-03		2	1
MW-23D	T	7/1/2004	CHROMIUM, HEXAVALENT	2.5E-03	ND	2	0
MW-23D	T	7/1/2005	CHROMIUM, HEXAVALENT	3.5E-03		2	1
MW-23D	T	7/1/2006	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0
MW-23D	T	7/1/2007	CHROMIUM, HEXAVALENT	3.0E-03		1	1
MW-23D	T	7/1/2008	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0
MW-23D	T	7/1/2009	CHROMIUM, HEXAVALENT	2.7E-03		1	1
MW-23D	T	7/1/2010	CHROMIUM, HEXAVALENT	4.1E-03		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-25D  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

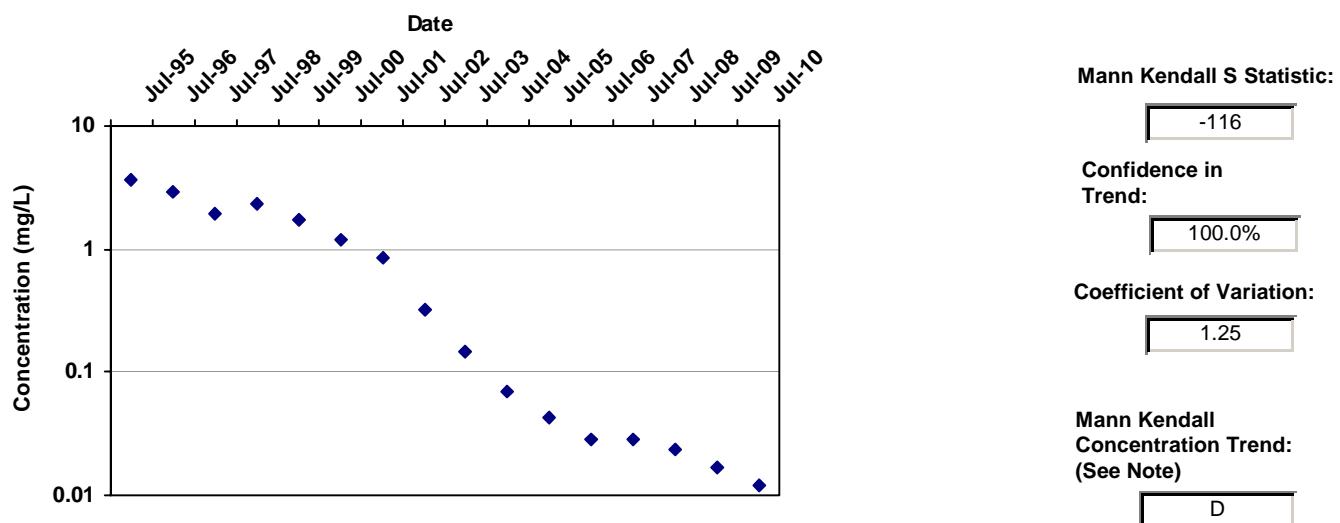
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-25D	T	7/1/1995	CHROMIUM, HEXAVALENT	1.1E+01		12	12
MW-25D	T	7/1/1996	CHROMIUM, HEXAVALENT	4.6E+00		12	12
MW-25D	T	7/1/1997	CHROMIUM, HEXAVALENT	1.5E+00		9	9
MW-25D	T	7/1/1998	CHROMIUM, HEXAVALENT	9.1E-01		2	2
MW-25D	T	7/1/1999	CHROMIUM, HEXAVALENT	1.3E-01		2	2
MW-25D	T	7/1/2000	CHROMIUM, HEXAVALENT	8.6E-02		3	3
MW-25D	T	7/1/2001	CHROMIUM, HEXAVALENT	8.8E-02		3	3
MW-25D	T	7/1/2002	CHROMIUM, HEXAVALENT	2.6E-02		4	4
MW-25D	T	7/1/2003	CHROMIUM, HEXAVALENT	2.0E-02		3	3
MW-25D	T	7/1/2004	CHROMIUM, HEXAVALENT	2.0E-02		2	2
MW-25D	T	7/1/2005	CHROMIUM, HEXAVALENT	3.4E-03		1	1
MW-25D	T	7/1/2006	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0
MW-25D	T	7/1/2007	CHROMIUM, HEXAVALENT	3.5E-03		2	1
MW-25D	T	7/1/2008	CHROMIUM, HEXAVALENT	3.6E-03		2	2
MW-25D	T	7/1/2009	CHROMIUM, HEXAVALENT	2.5E-03		2	2
MW-25D	T	7/1/2010	CHROMIUM, HEXAVALENT	3.5E-03		3	3

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-26D  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

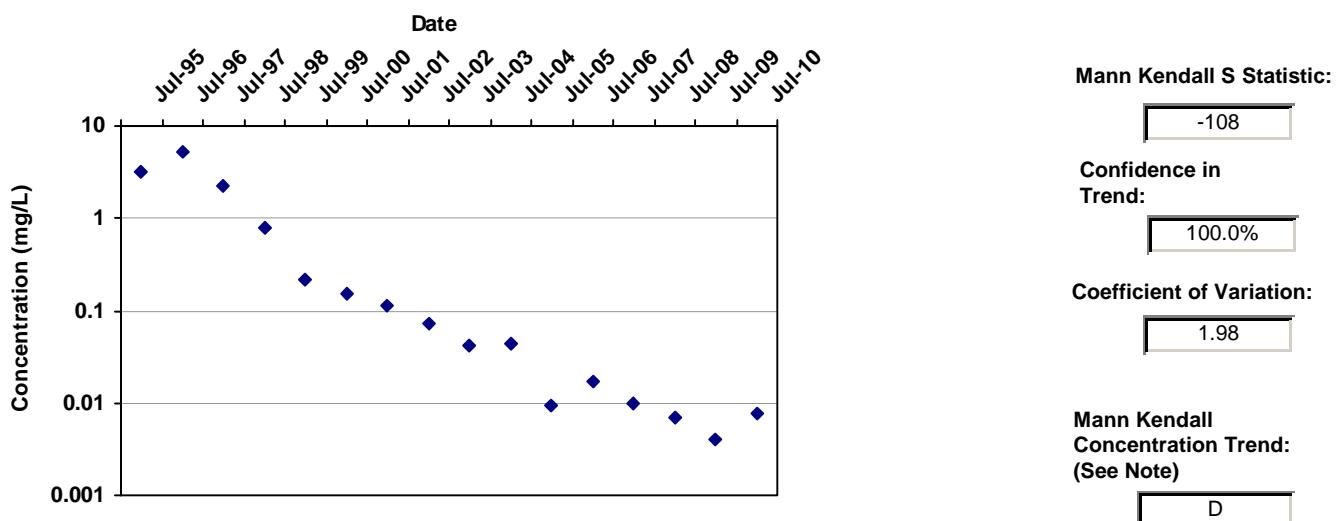
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-26D	T	7/1/1995	CHROMIUM, HEXAVALENT	3.6E+00		11	11
MW-26D	T	7/1/1996	CHROMIUM, HEXAVALENT	2.9E+00		12	12
MW-26D	T	7/1/1997	CHROMIUM, HEXAVALENT	1.9E+00		9	9
MW-26D	T	7/1/1998	CHROMIUM, HEXAVALENT	2.3E+00		2	2
MW-26D	T	7/1/1999	CHROMIUM, HEXAVALENT	1.8E+00		2	2
MW-26D	T	7/1/2000	CHROMIUM, HEXAVALENT	1.2E+00		3	3
MW-26D	T	7/1/2001	CHROMIUM, HEXAVALENT	8.6E-01		3	3
MW-26D	T	7/1/2002	CHROMIUM, HEXAVALENT	3.3E-01		4	4
MW-26D	T	7/1/2003	CHROMIUM, HEXAVALENT	1.5E-01		3	3
MW-26D	T	7/1/2004	CHROMIUM, HEXAVALENT	6.9E-02		2	2
MW-26D	T	7/1/2005	CHROMIUM, HEXAVALENT	4.4E-02		2	2
MW-26D	T	7/1/2006	CHROMIUM, HEXAVALENT	2.8E-02		2	2
MW-26D	T	7/1/2007	CHROMIUM, HEXAVALENT	2.9E-02		2	2
MW-26D	T	7/1/2008	CHROMIUM, HEXAVALENT	2.4E-02		2	2
MW-26D	T	7/1/2009	CHROMIUM, HEXAVALENT	1.7E-02		2	2
MW-26D	T	7/1/2010	CHROMIUM, HEXAVALENT	1.2E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-27D  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

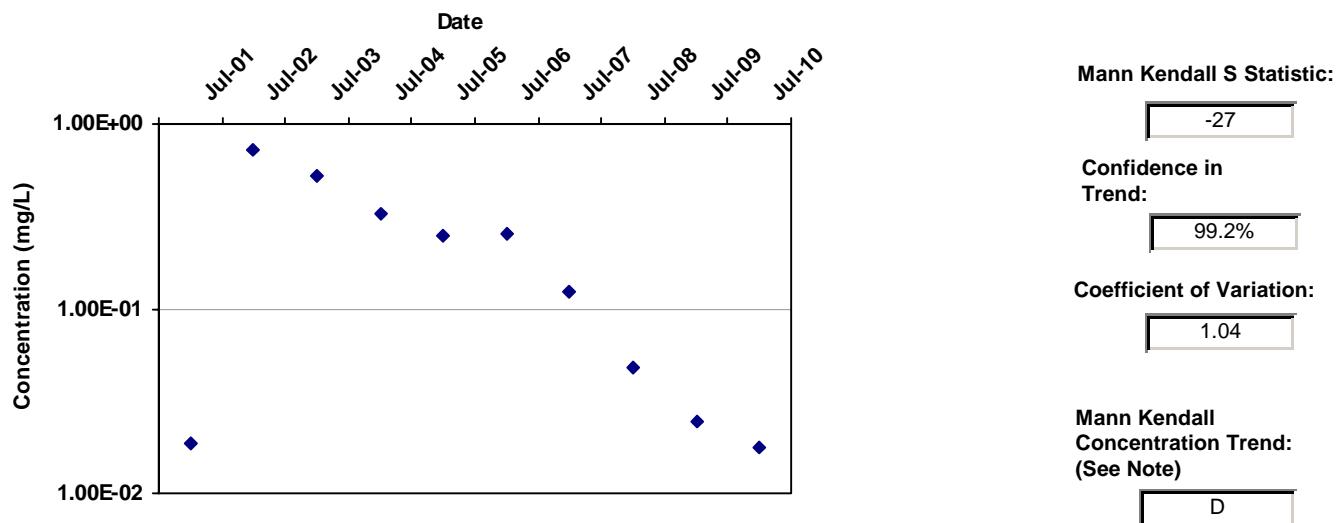
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-27D	T	7/1/1995	CHROMIUM, HEXAVALENT	3.1E+00		11	11
MW-27D	T	7/1/1996	CHROMIUM, HEXAVALENT	5.2E+00		2	2
MW-27D	T	7/1/1997	CHROMIUM, HEXAVALENT	2.3E+00		2	2
MW-27D	T	7/1/1998	CHROMIUM, HEXAVALENT	7.8E-01		2	2
MW-27D	T	7/1/1999	CHROMIUM, HEXAVALENT	2.2E-01		2	2
MW-27D	T	7/1/2000	CHROMIUM, HEXAVALENT	1.6E-01		3	3
MW-27D	T	7/1/2001	CHROMIUM, HEXAVALENT	1.1E-01		3	3
MW-27D	T	7/1/2002	CHROMIUM, HEXAVALENT	7.2E-02		4	4
MW-27D	T	7/1/2003	CHROMIUM, HEXAVALENT	4.2E-02		3	3
MW-27D	T	7/1/2004	CHROMIUM, HEXAVALENT	4.4E-02		2	2
MW-27D	T	7/1/2005	CHROMIUM, HEXAVALENT	9.6E-03		1	1
MW-27D	T	7/1/2006	CHROMIUM, HEXAVALENT	1.8E-02		1	1
MW-27D	T	7/1/2007	CHROMIUM, HEXAVALENT	9.8E-03		1	1
MW-27D	T	7/1/2008	CHROMIUM, HEXAVALENT	7.0E-03		2	2
MW-27D	T	7/1/2009	CHROMIUM, HEXAVALENT	4.1E-03		2	2
MW-27D	T	7/1/2010	CHROMIUM, HEXAVALENT	7.8E-03		3	3

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-49  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-49	T	7/1/2001	CHROMIUM, HEXAVALENT	1.8E-02		3	2
MW-49	T	7/1/2002	CHROMIUM, HEXAVALENT	7.3E-01		4	4
MW-49	T	7/1/2003	CHROMIUM, HEXAVALENT	5.2E-01		3	3
MW-49	T	7/1/2004	CHROMIUM, HEXAVALENT	3.3E-01		2	2
MW-49	T	7/1/2005	CHROMIUM, HEXAVALENT	2.5E-01		2	2
MW-49	T	7/1/2006	CHROMIUM, HEXAVALENT	2.6E-01		2	2
MW-49	T	7/1/2007	CHROMIUM, HEXAVALENT	1.3E-01		2	2
MW-49	T	7/1/2008	CHROMIUM, HEXAVALENT	4.8E-02		2	2
MW-49	T	7/1/2009	CHROMIUM, HEXAVALENT	2.5E-02		2	2
MW-49	T	7/1/2010	CHROMIUM, HEXAVALENT	1.8E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

## **TOE OF PLUME**

**Other Toe Wells**

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-42

**Well Type:** T

**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010

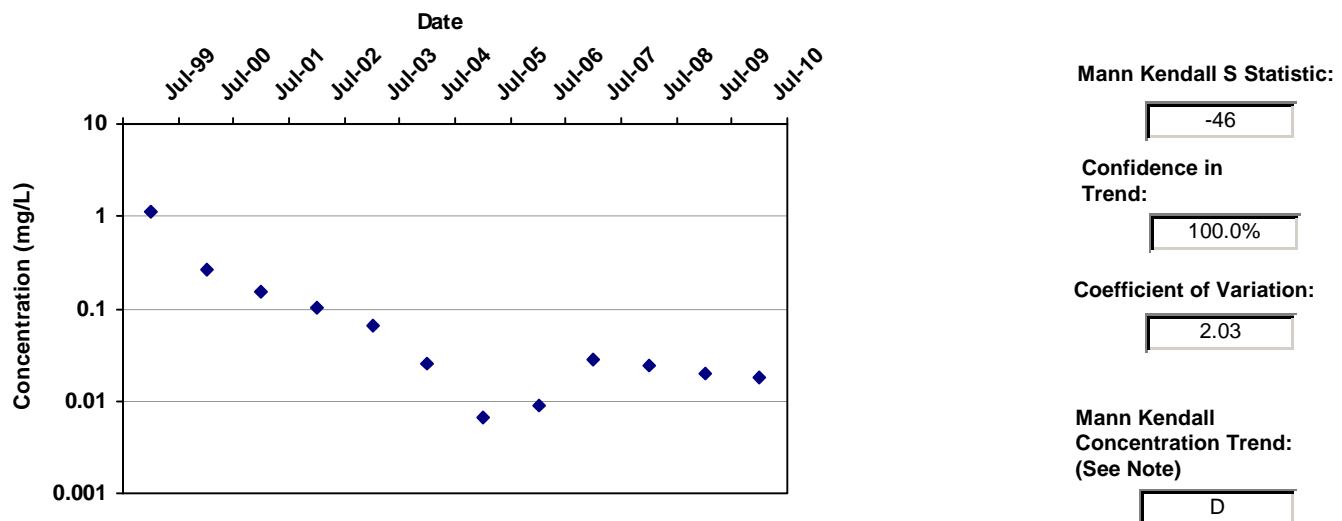
**Consolidation Period:** Yearly

**Consolidation Type:** Geometric Mean

**Duplicate Consolidation:** Maximum

**ND Values:** 1/2 Detection Limit

**J Flag Values :** Actual Value



## Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-42	T	7/1/1999	CHROMIUM, HEXAVALENT	1.1E+00		3	3
AMW-42	T	7/1/2000	CHROMIUM, HEXAVALENT	2.6E-01		3	3
AMW-42	T	7/1/2001	CHROMIUM, HEXAVALENT	1.5E-01		3	3
AMW-42	T	7/1/2002	CHROMIUM, HEXAVALENT	1.0E-01		4	4
AMW-42	T	7/1/2003	CHROMIUM, HEXAVALENT	6.4E-02		3	3
AMW-42	T	7/1/2004	CHROMIUM, HEXAVALENT	2.6E-02		6	6
AMW-42	T	7/1/2005	CHROMIUM, HEXAVALENT	6.6E-03		4	4
AMW-42	T	7/1/2006	CHROMIUM, HEXAVALENT	9.0E-03		2	1
AMW-42	T	7/1/2007	CHROMIUM, HEXAVALENT	2.9E-02		2	2
AMW-42	T	7/1/2008	CHROMIUM, HEXAVALENT	2.4E-02		1	1
AMW-42	T	7/1/2009	CHROMIUM, HEXAVALENT	2.0E-02		1	1
AMW-42	T	7/1/2010	CHROMIUM, HEXAVALENT	1.8E-02		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-63

**Well Type:** T

**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to  10/20/2010

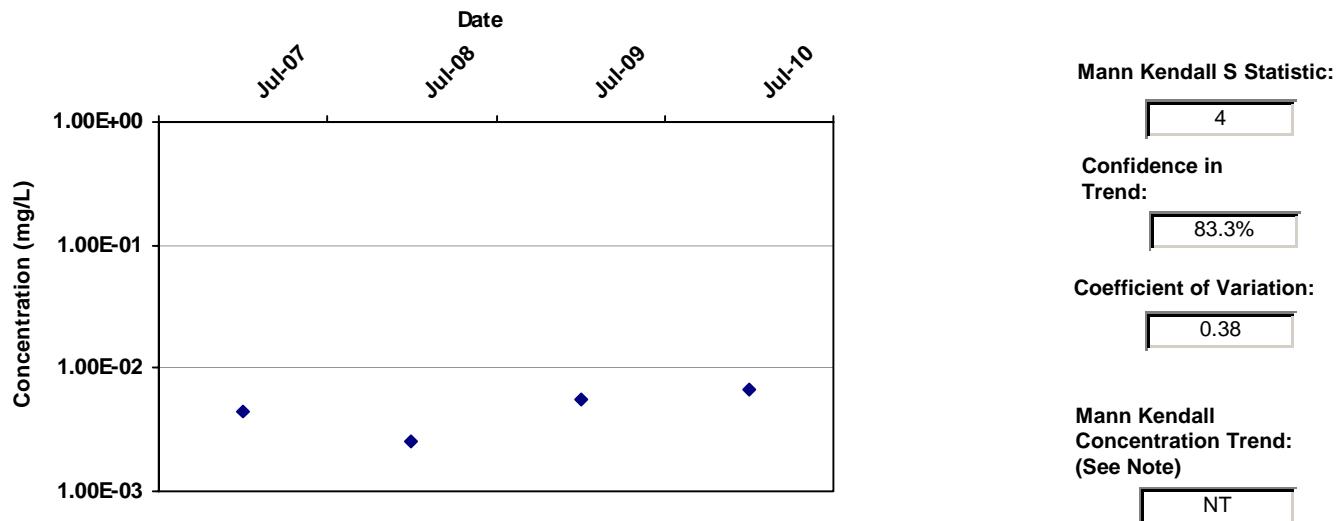
**Consolidation Period:** Yearly

**Consolidation Type:** Geometric Mean

**Duplicate Consolidation:** Maximum

**ND Values:** 1/2 Detection Limit

**J Flag Values :** Actual Value



## Data Table:

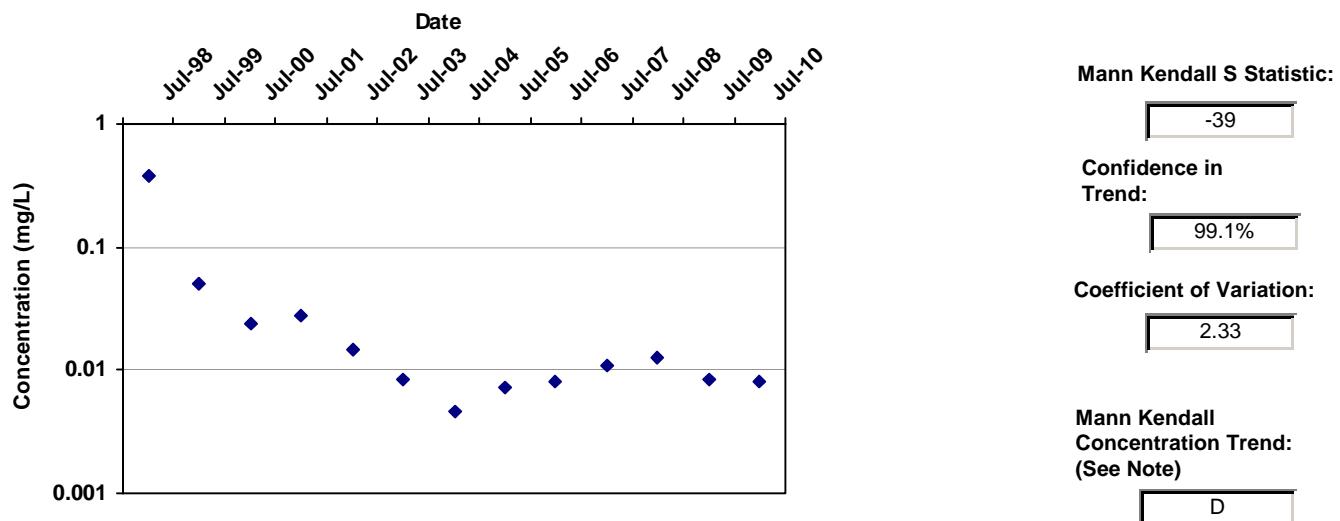
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-63	T	7/1/2007	CHROMIUM, HEXAVALENT	4.4E-03		4	2
AMW-63	T	7/1/2008	CHROMIUM, HEXAVALENT	2.5E-03	ND	2	0
AMW-63	T	7/1/2009	CHROMIUM, HEXAVALENT	5.6E-03		2	1
AMW-63	T	7/1/2010	CHROMIUM, HEXAVALENT	6.8E-03		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-31  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

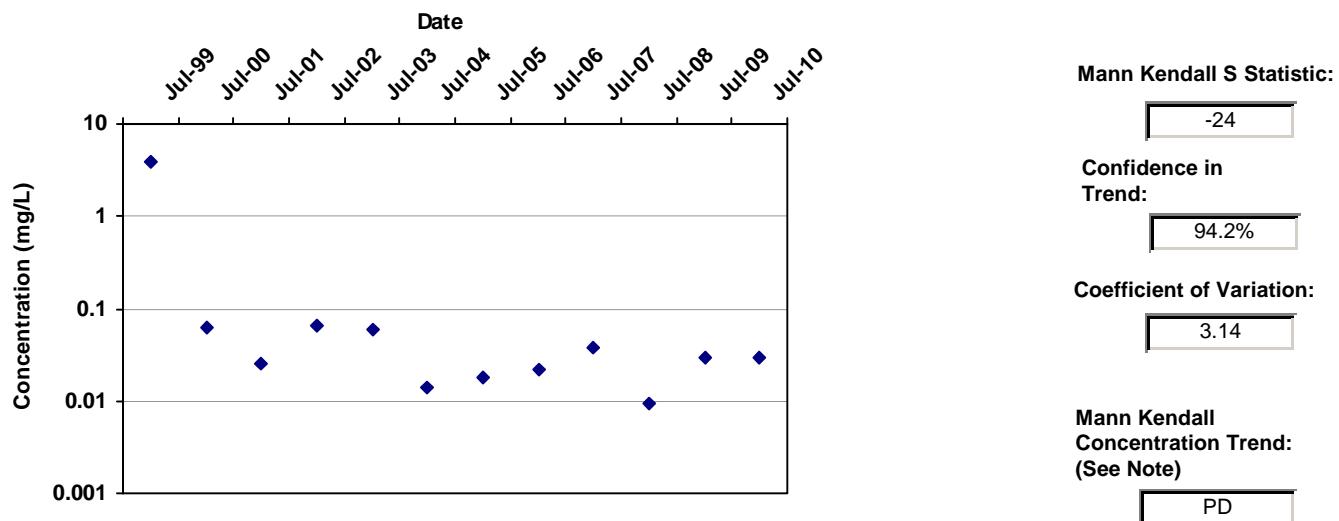
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-31	T	7/1/1998	CHROMIUM, HEXAVALENT	3.7E-01		6	6
MW-31	T	7/1/1999	CHROMIUM, HEXAVALENT	5.0E-02		2	2
MW-31	T	7/1/2000	CHROMIUM, HEXAVALENT	2.4E-02		3	3
MW-31	T	7/1/2001	CHROMIUM, HEXAVALENT	2.7E-02		2	2
MW-31	T	7/1/2002	CHROMIUM, HEXAVALENT	1.5E-02		3	3
MW-31	T	7/1/2003	CHROMIUM, HEXAVALENT	8.3E-03		3	3
MW-31	T	7/1/2004	CHROMIUM, HEXAVALENT	4.7E-03		2	1
MW-31	T	7/1/2005	CHROMIUM, HEXAVALENT	7.3E-03		1	1
MW-31	T	7/1/2006	CHROMIUM, HEXAVALENT	8.1E-03		1	1
MW-31	T	7/1/2007	CHROMIUM, HEXAVALENT	1.1E-02		1	1
MW-31	T	7/1/2008	CHROMIUM, HEXAVALENT	1.3E-02		1	1
MW-31	T	7/1/2009	CHROMIUM, HEXAVALENT	8.4E-03		1	1
MW-31	T	7/1/2010	CHROMIUM, HEXAVALENT	8.1E-03		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-35  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

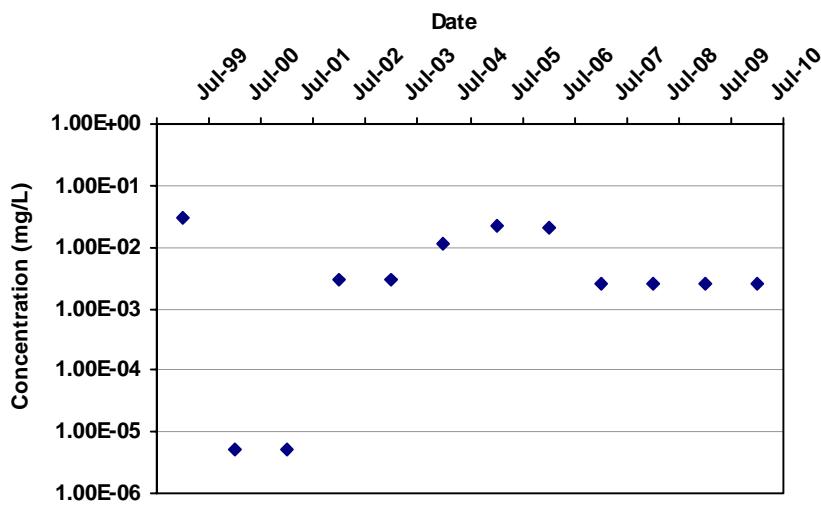
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-35	T	7/1/1999	CHROMIUM, HEXAVALENT	4.0E+00		2	2
MW-35	T	7/1/2000	CHROMIUM, HEXAVALENT	6.2E-02		3	3
MW-35	T	7/1/2001	CHROMIUM, HEXAVALENT	2.5E-02		3	3
MW-35	T	7/1/2002	CHROMIUM, HEXAVALENT	6.6E-02		6	6
MW-35	T	7/1/2003	CHROMIUM, HEXAVALENT	5.8E-02		3	3
MW-35	T	7/1/2004	CHROMIUM, HEXAVALENT	1.4E-02		5	5
MW-35	T	7/1/2005	CHROMIUM, HEXAVALENT	1.8E-02		4	4
MW-35	T	7/1/2006	CHROMIUM, HEXAVALENT	2.2E-02		2	2
MW-35	T	7/1/2007	CHROMIUM, HEXAVALENT	3.7E-02		2	2
MW-35	T	7/1/2008	CHROMIUM, HEXAVALENT	9.5E-03		2	1
MW-35	T	7/1/2009	CHROMIUM, HEXAVALENT	2.9E-02		2	2
MW-35	T	7/1/2010	CHROMIUM, HEXAVALENT	3.0E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-41  
**Well Type:** T  
**COC:** CHROMIUM, HEXAVALENT

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



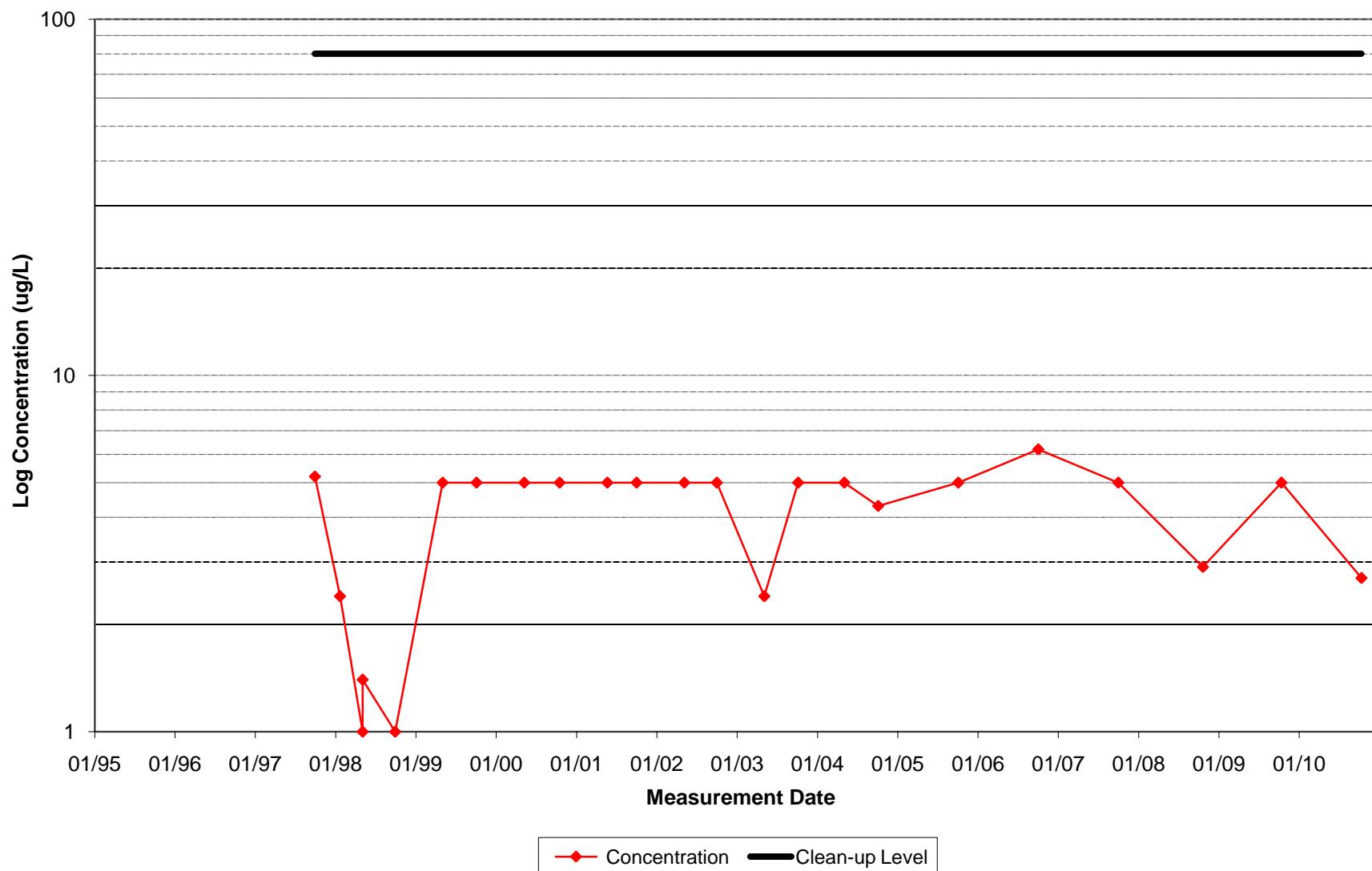
**Mann Kendall S Statistic:** -7  
**Confidence in Trend:** 65.6%  
**Coefficient of Variation:** 1.23  
**Mann Kendall Concentration Trend: (See Note)** NT

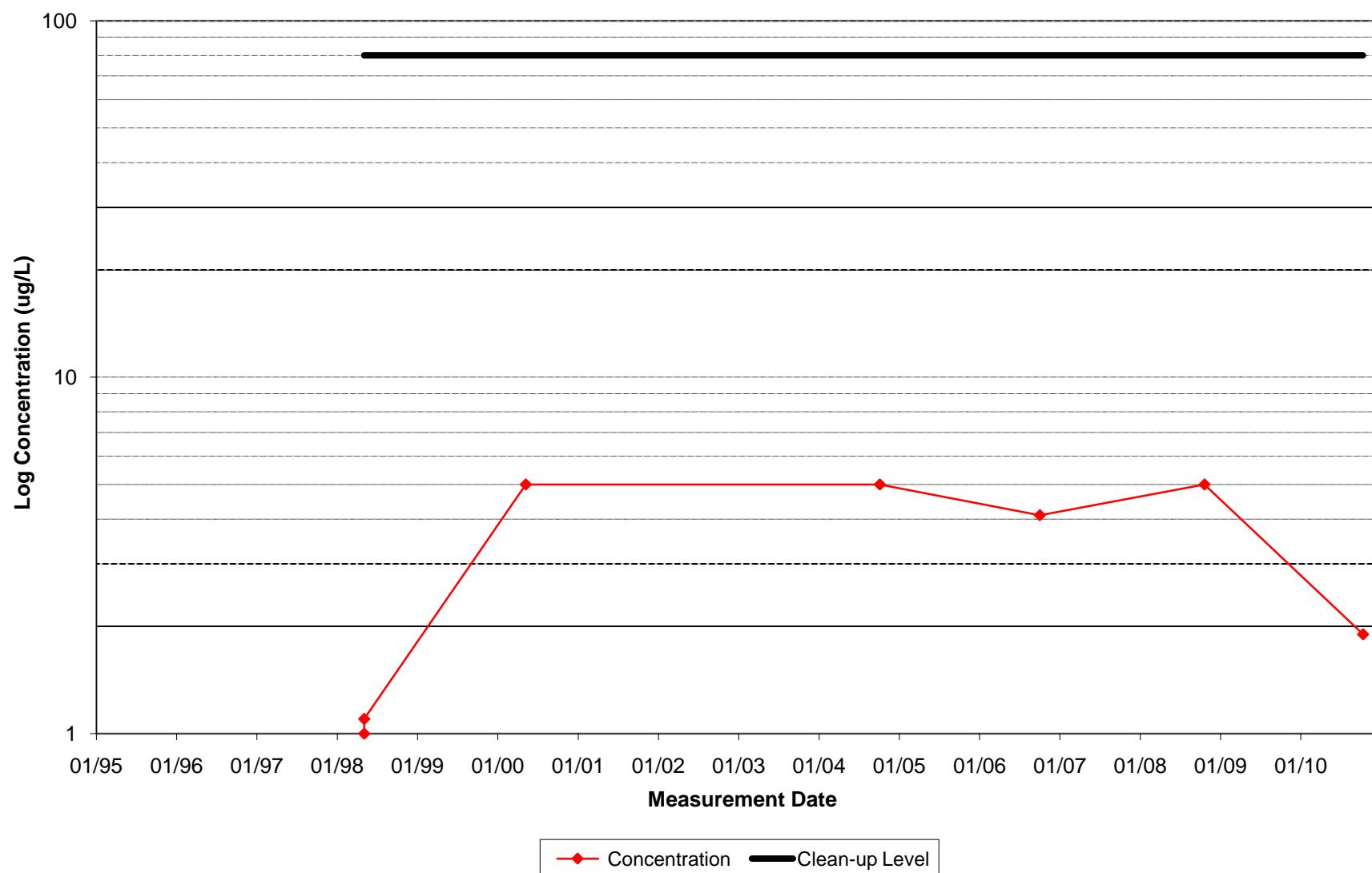
## Data Table:

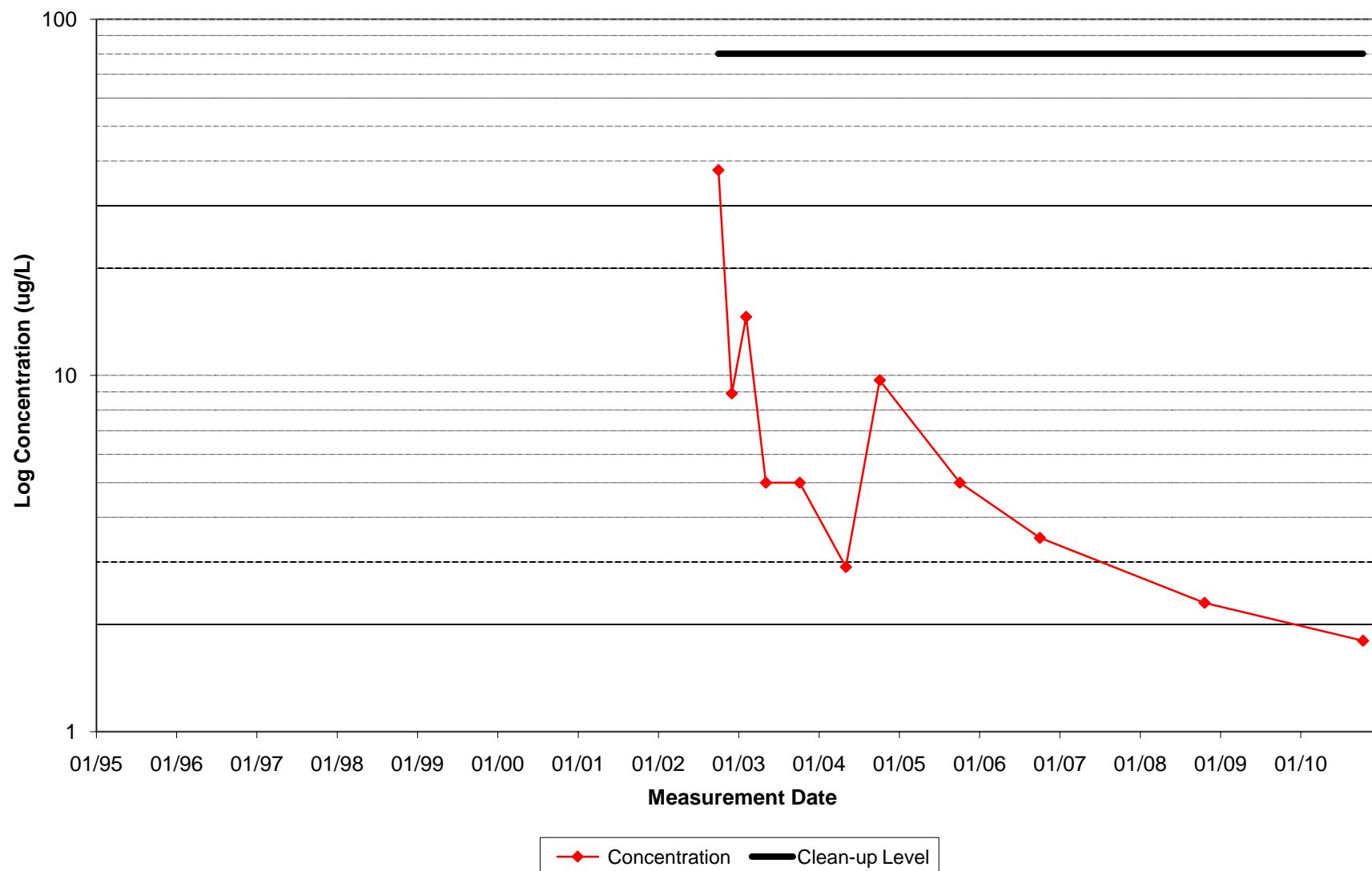
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-41	T	7/1/1999	CHROMIUM, HEXAVALENT	3.0E-02		2	2
MW-41	T	7/1/2000	CHROMIUM, HEXAVALENT	5.0E-06	ND	3	0
MW-41	T	7/1/2001	CHROMIUM, HEXAVALENT	5.0E-06	ND	3	0
MW-41	T	7/1/2002	CHROMIUM, HEXAVALENT	3.0E-03		4	2
MW-41	T	7/1/2003	CHROMIUM, HEXAVALENT	2.9E-03		3	1
MW-41	T	7/1/2004	CHROMIUM, HEXAVALENT	1.1E-02		6	3
MW-41	T	7/1/2005	CHROMIUM, HEXAVALENT	2.2E-02		5	4
MW-41	T	7/1/2006	CHROMIUM, HEXAVALENT	2.0E-02		2	1
MW-41	T	7/1/2007	CHROMIUM, HEXAVALENT	2.5E-03	ND	4	0
MW-41	T	7/1/2008	CHROMIUM, HEXAVALENT	2.5E-03	ND	2	0
MW-41	T	7/1/2009	CHROMIUM, HEXAVALENT	2.5E-03	ND	2	0
MW-41	T	7/1/2010	CHROMIUM, HEXAVALENT	2.5E-03	ND	1	0

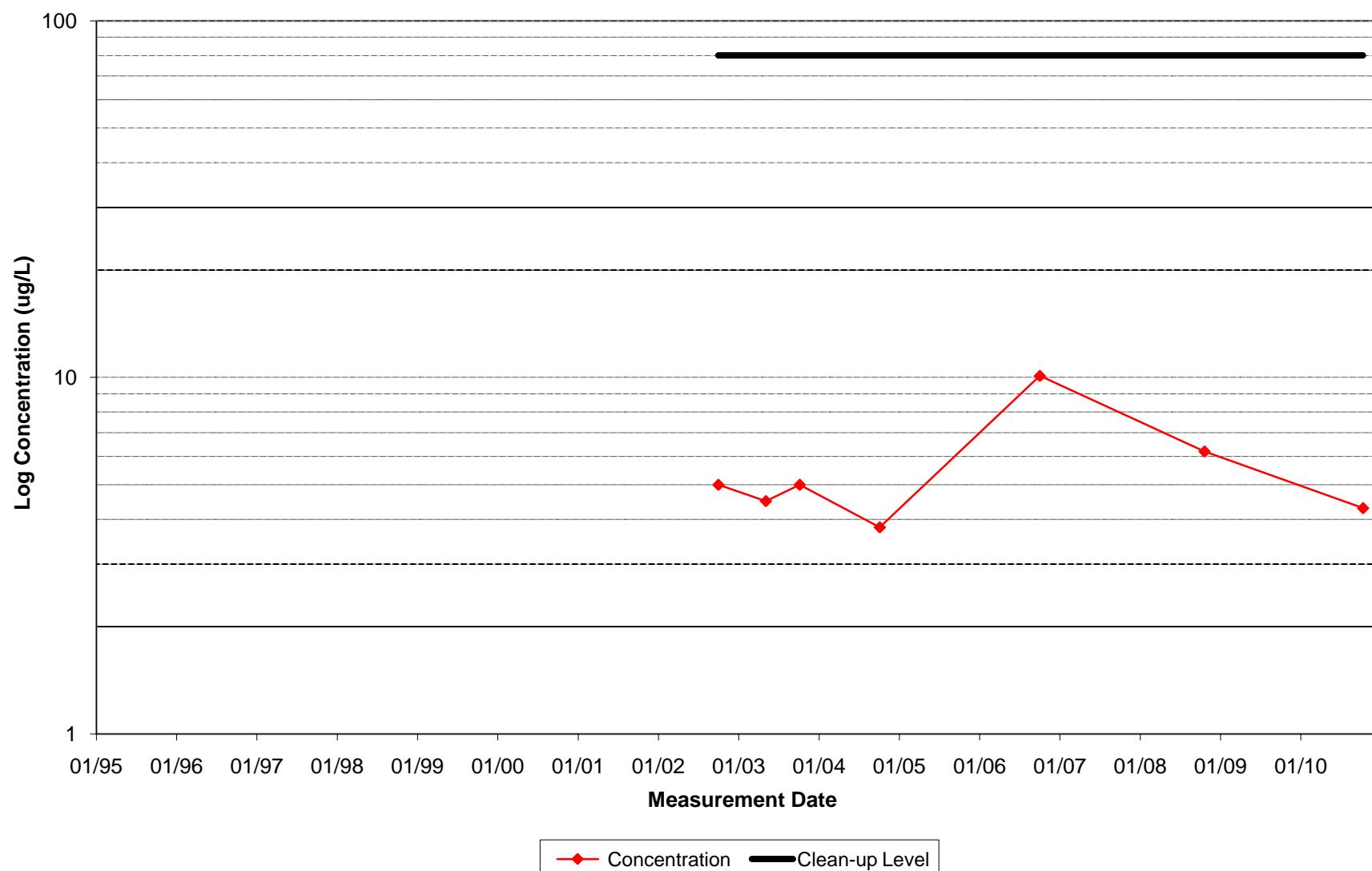
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

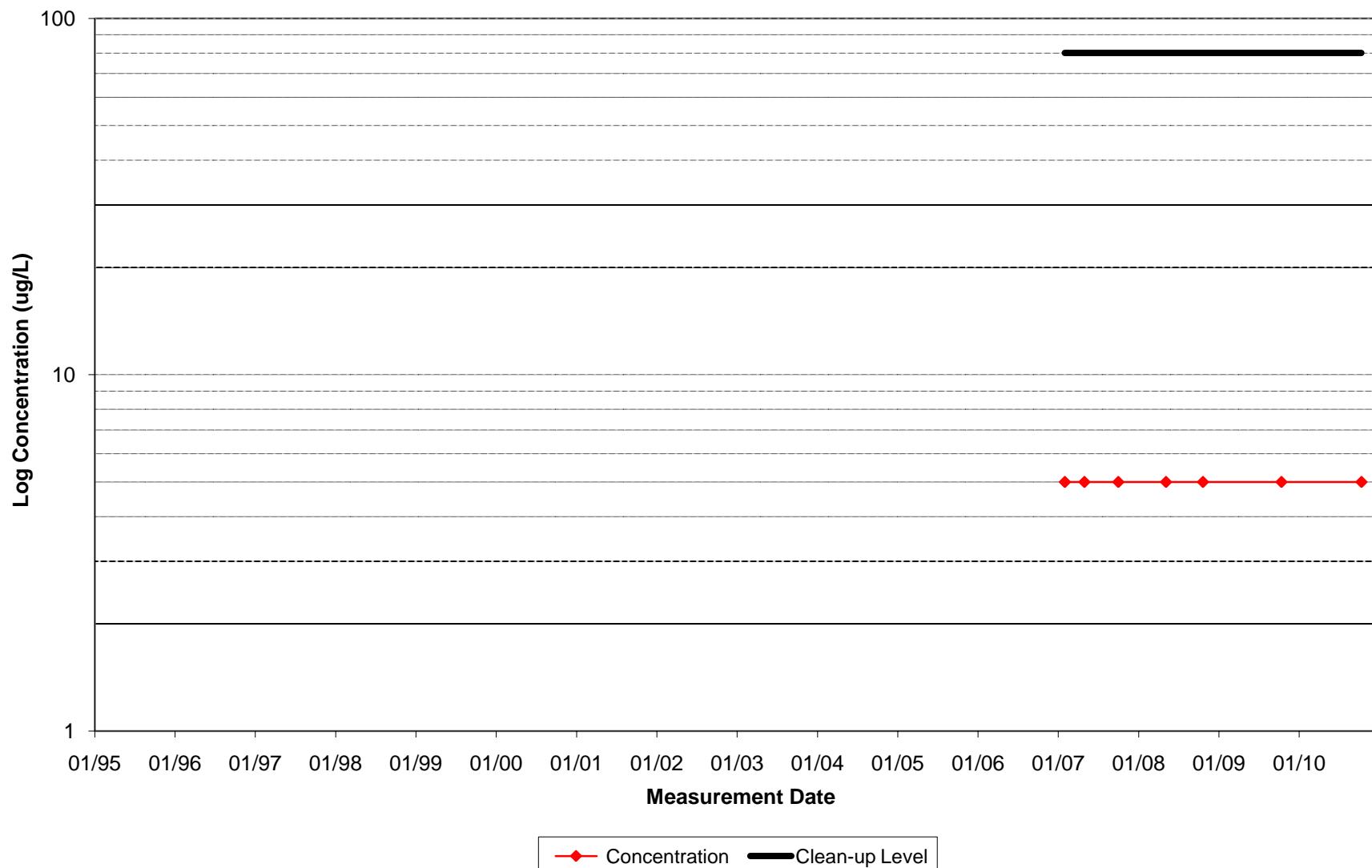
# **TROUTDALE WELLS**

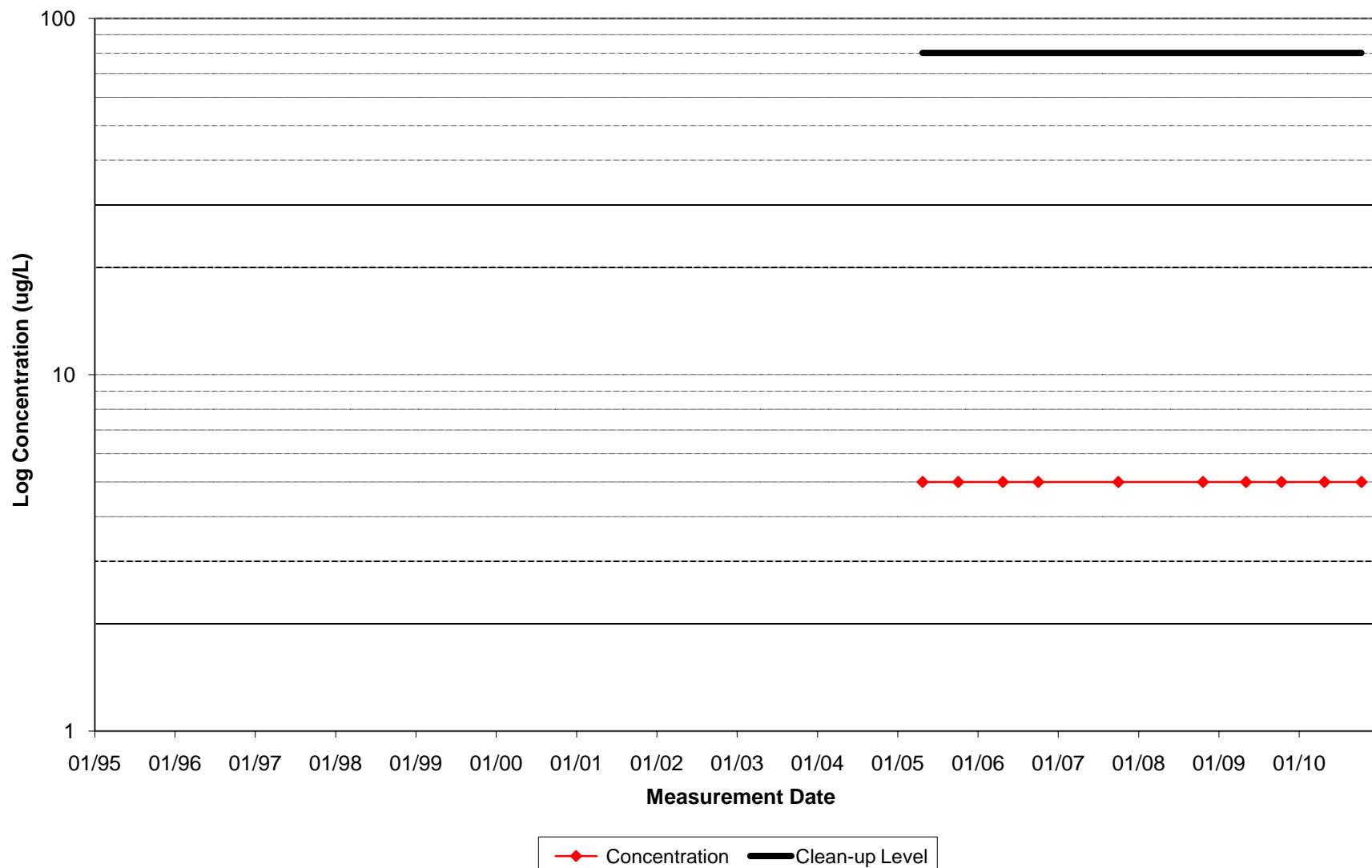
**AMW-24 - Cr (ug/L)**

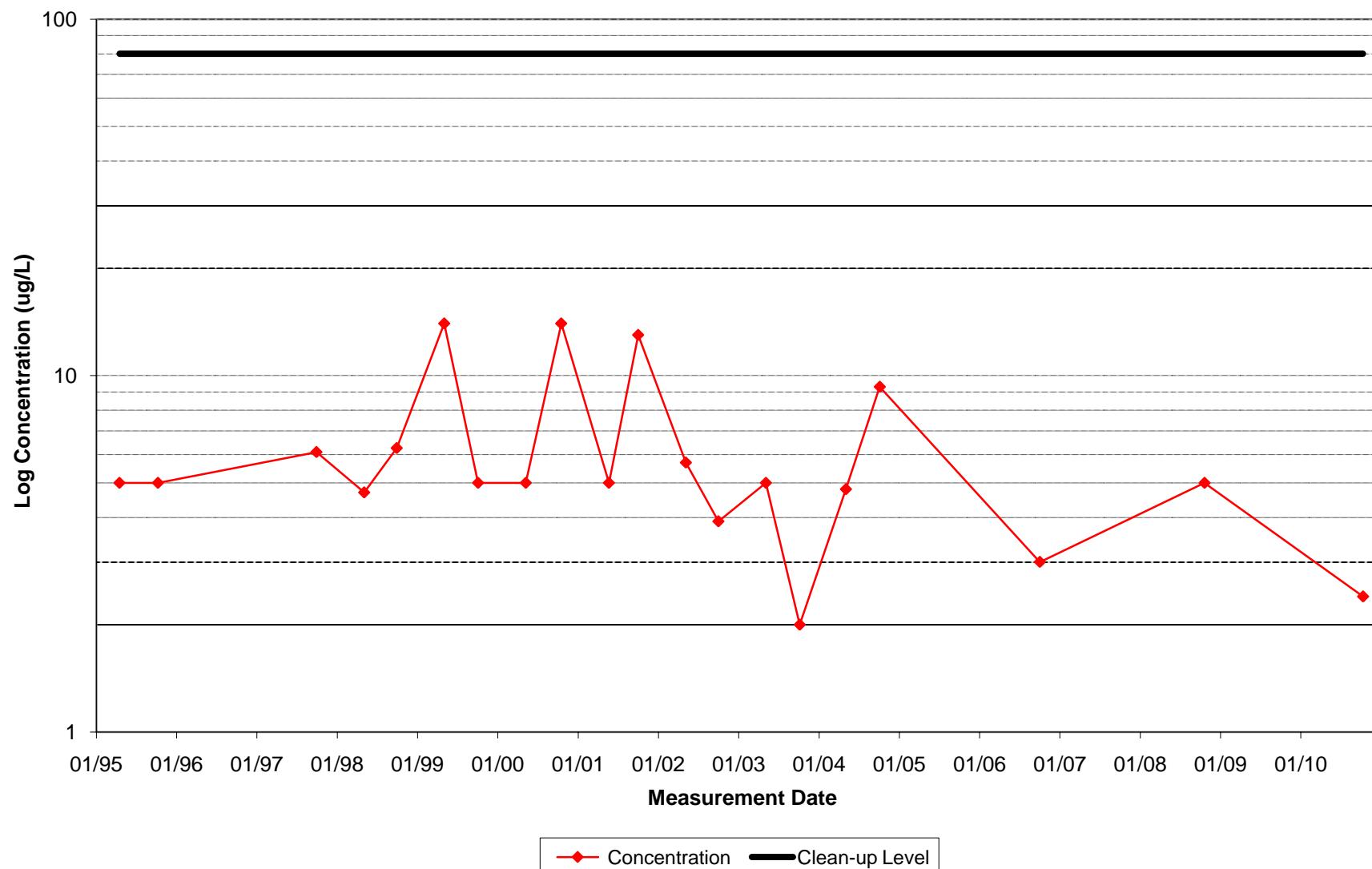
**AMW-25 - Cr (ug/L)**

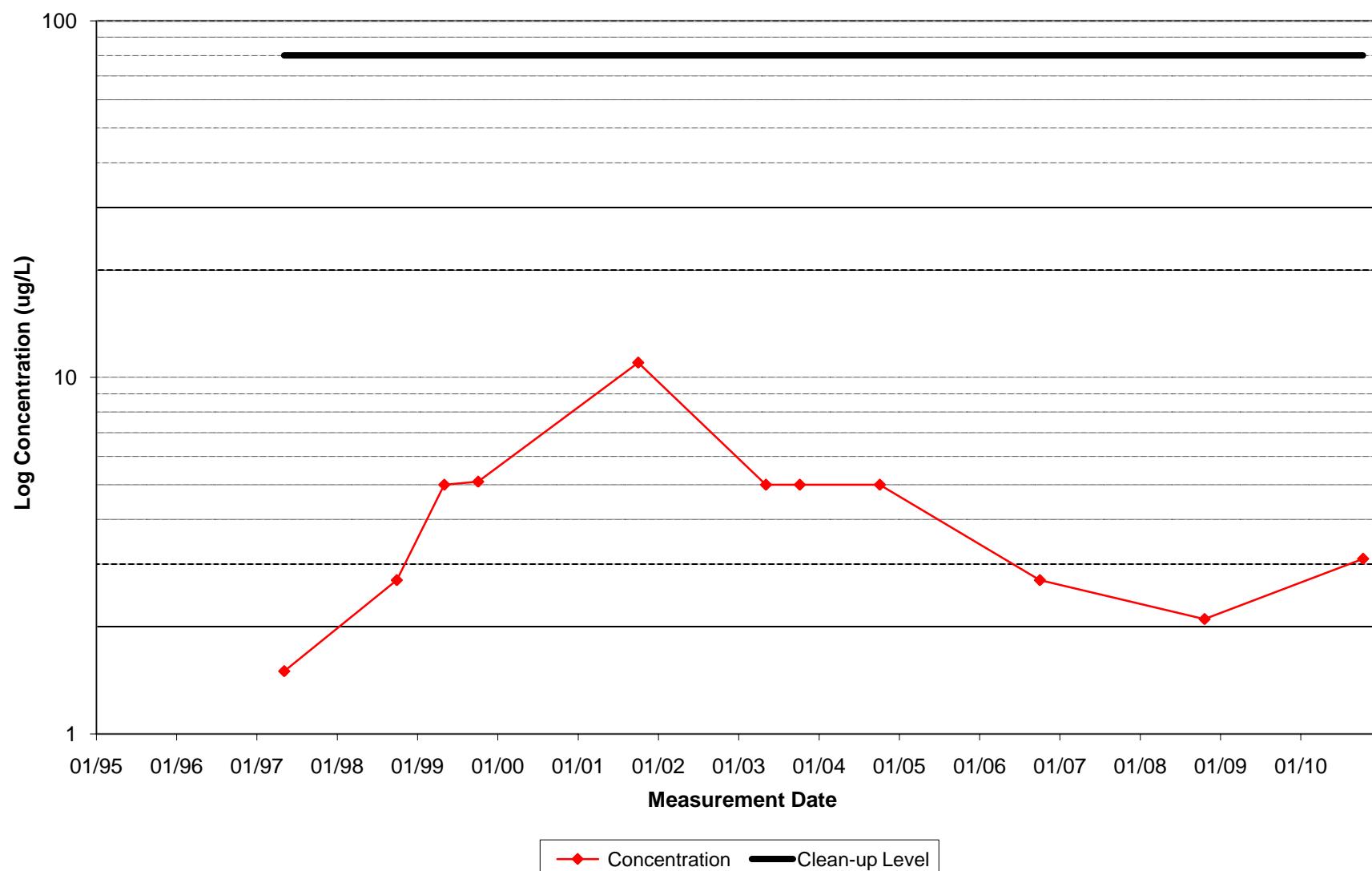
**AMW-50 - Cr (ug/L)**

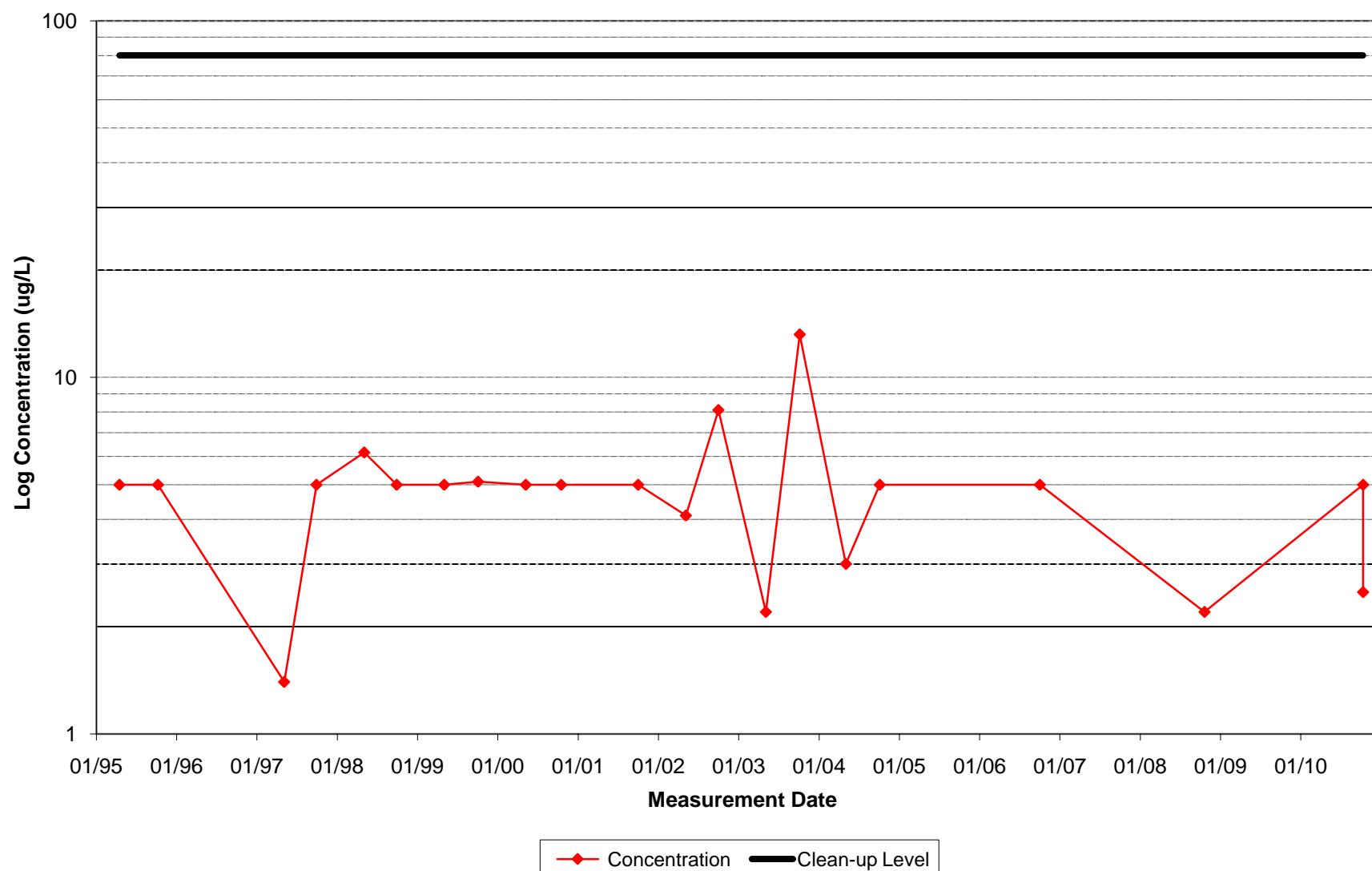
**AMW-51 - Cr (ug/L)**

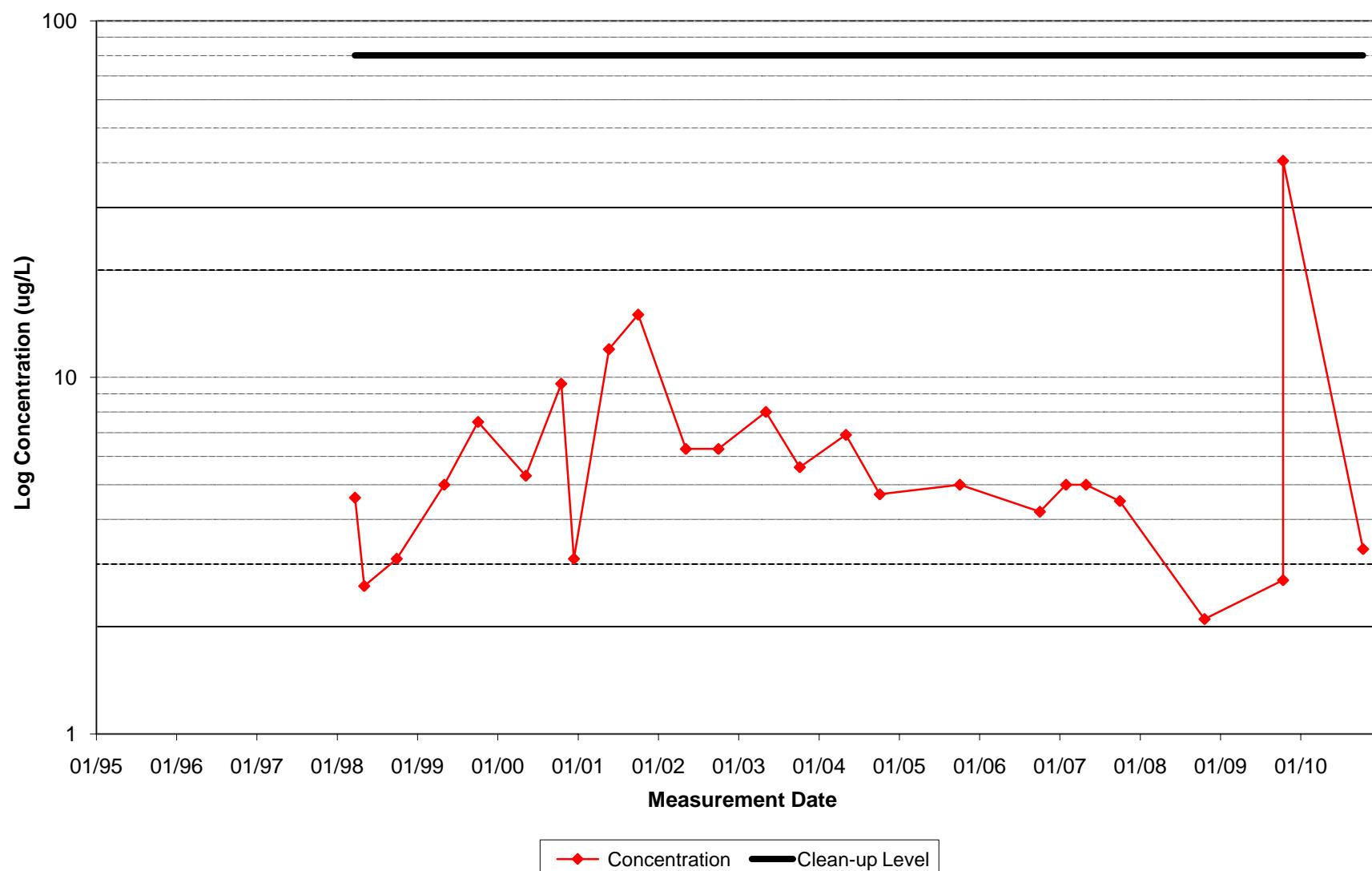
**AMW-62 - Cr (ug/L)**

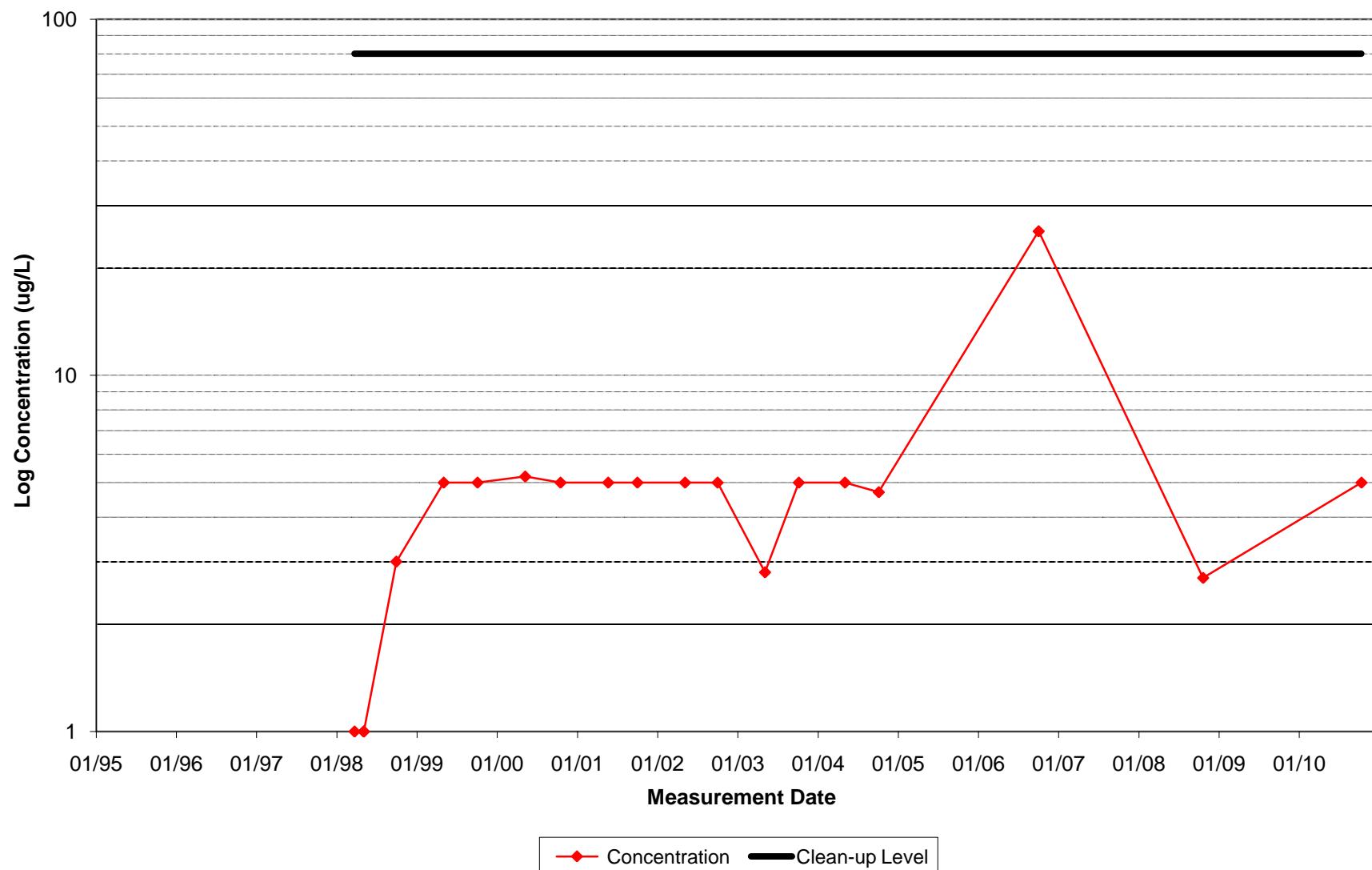
**BENNETT - Cr (ug/L)**

**CPU-2 - Cr (ug/L)**

**CPU-3D - Cr (ug/L)**

**CPU-10 - Cr (ug/L)**

**MW-33 - Cr (ug/L)**

**MW-34 - Cr (ug/L)**

**APPENDIX B**

**TCE CONCENTRATIONS IN GROUNDWATER**

## **APPENDIX B-1**

### **TCE CONCENTRATIONS – SUMMARY TABLES**

## B1. Trichloroethene Concentration Summary

Well Group	Well	Historical Maximum		Spring 2009	Fall 2009	Spring 2010	Fall 2010
		Date	Result				
Upgradient of TCE	AMW-6A	5/2/2007	0.93	0.58	0.38 J	0.41 J	0.46 J
	AMW-7A	1/29/2007	1.0	0.58	0.45 J	0.46 J	0.43 J
	AMW-8A	4/25/1995	<b>692</b>	1.1	1.0	1.3	0.79
	AMW-10A	4/19/1995	0.79 J	0.51	0.27 J	0.17 J	0.18 J
	AMW-11A	1/29/2007	1.5	0.49 J	0.48 J	0.51	0.45 J
TCE Source	AMW-1A	10/12/1995	<b>1,290</b>	0.32 J	<b>12</b>	0.95	2.8
	AMW-1B	4/26/1995	<b>82.2</b>	0.49 J	0.51	--	0.45 J
	<b>AMW-2A</b>	10/13/1995	<b>5,350</b>	<b>83</b>	<b>60</b>	<b>91</b>	<b>29</b>
	AMW-2B	4/26/1995	<b>30.8 J</b>	0.65	0.53	--	0.49 J
	AMW-3A	5/15/1996	<b>34</b>	0.66	0.68	0.75	0.85
	<b>AMW-12A</b>	5/9/1997	<b>19,300 J</b>	<b>21</b>	<b>24</b>	<b>31</b>	<b>29</b>
	AMW-13A	10/12/1995	<b>74.8</b>	0.94	0.58	0.50 U	0.50 U
	AMW-19A	5/14/2002	<b>490 D</b>	1.9	1.7	1.2	1.7
	AMW-26	10/2/2001	<b>100 D</b>	0.33 J	2.3	--	0.24 J
	AMW-52A	2/1/2006	<b>29</b>	0.08 J	0.50 U	--	0.16 J
	<b>AMW-53A</b>	12/9/2003	<b>240 D</b>	3.1	<b>14</b>	<b>10</b>	<b>11</b>
	AMW-54A	10/12/2004	<b>190 D</b>	2.2	2.5	1.9	2.3
	AMW-55A	8/3/2004	<b>39</b>	0.82	0.97	--	0.95
	AMW-56A	12/9/2003	<b>610 D</b>	0.47 J	0.41 J	--	2.3
	<b>MW-1A</b>	5/10/1999	<b>3,900 D</b>	<b>10</b>	<b>10</b>	<b>11</b>	<b>7.9</b>
Proximal	AMW-58	10/29/2008	0.89	--	--	--	0.15 J
	MW-2A	10/28/2008	4.7	--	--	--	2.1
	MW-3B	10/13/1999	<b>32</b>	--	2.3	--	2.0
	<b>MW-4B</b>	10/29/2008	<b>7.2</b>	--	--	--	<b>5.9</b>
	<b>MW-6B</b>	5/10/1997	<b>1,230</b>	<b>7.3</b>	<b>6.4</b>	<b>6.1</b>	4.7
	MW-8B	10/29/2008	<b>6.0</b>	--	--	--	3.3
	<b>MW-9B</b>	10/29/2008	<b>9.3</b>	--	--	--	<b>5.7</b>
	<b>MW-10B</b>	10/8/1997	<b>1,300</b>	<b>28</b>	<b>21</b>	<b>19</b>	<b>18</b>
	MW-10C	10/6/1998	<b>1,500 J</b>	<b>7.3</b>	4.9	3.5	3.6
	<b>MW-12C</b>	4/26/1995	<b>9,430</b>	--	<b>11</b>	--	<b>24</b>
	<b>MW-13C</b>	5/15/1996	<b>35</b>	--	<b>5.6</b>	--	<b>5.7</b>
	PW-1B	5/5/1999	<b>900 D</b>	<b>5.2</b>	3.6	3.3	2.8

## B1. Summary of Recent Trichloroethene Concentrations

Well Group	Well	Historical Maximum		Spring 2009	Fall 2009	Spring 2010	Fall 2010
		Date	Result				
Intermediate	AMW-16	4/25/1995	<b>87</b>	--	2.2	--	1.7
	<b>AMW-17*</b>	4/24/1995	<b>66.9</b>	1.3	1.2	1.1	<b>28</b>
	<b>AMW-18*</b>	5/7/2008	<b>460 D</b>	<b>320</b>	<b>210</b>	<b>200</b>	<b>130</b>
	<b>AMW-59</b>	10/4/2006	<b>310 D</b>	--	<b>130</b>	--	<b>76</b>
	<b>CPU-14</b>	10/23/2000	<b>63</b>	--	10	--	<b>7.7</b>
	<b>MW-14C</b>	5/4/1998	<b>2,500</b>	<b>23</b>	<b>22</b>	<b>20</b>	<b>22</b>
	<b>MW-14E</b>	5/10/1997	<b>6,540</b>	<b>100</b>	<b>87</b>	<b>73</b>	<b>76</b>
	<b>MW-15E</b>	5/8/1997	<b>1,100</b>	<b>8.4</b>	<b>7.5</b>	<b>7.9</b>	<b>6.0</b>
	MW-16E	10/9/2007	<b>5.7</b>	--	2.8	--	0.92
	<b>MW-18D</b>	1/19/1995	<b>7,800 J</b>	<b>97</b>	<b>86</b>	<b>62</b>	<b>66</b>
	<b>MW-18E</b>	5/12/1998	<b>2,700</b>	--	<b>160</b>	--	<b>130</b>
	<b>MW-19D</b>	2/3/1995	<b>6,300 J</b>	<b>53</b>	<b>44</b>	<b>30</b>	<b>34</b>
	<b>MW-20D</b>	10/11/1999	<b>4,100 J</b>	<b>53</b>	<b>42</b>	<b>41</b>	<b>43</b>
	<b>MW-38</b>	--	--	--	--	--	<b>12</b>
	<b>PZ-39</b>	12/20/2009	<b>2,100 J</b>	--	<b>99</b>	--	<b>97</b>
Church of God	AMW-14	4/20/1995	<b>506</b>	--	0.88	0.90 UJ	0.85 UJ
	<b>AMW-27</b>	6/2/1999	<b>83</b>	<b>23</b>	<b>19</b>	<b>16</b>	<b>16</b>
	<b>AMW-61</b>	10/29/2008	<b>6.5</b>	--	--	--	<b>6.0</b>
	CPU-12	5/7/2002	<b>13</b>	--	--	--	2.8
	CPU-13	10/8/1997	<b>110</b>	2.2	1.9	1.6	1.6
	<b>MW-21D</b>	2/3/1995	<b>3,000 J</b>	<b>11</b>	<b>11</b>	<b>7.3</b>	<b>7.0</b>
	<b>MW-22D</b>	6/9/1997	<b>390</b>	<b>12</b>	<b>10</b>	<b>7.9</b>	<b>8.0</b>
	MW-23D	10/1/1998	<b>67</b>	--	2.5	--	1.9
	MW-25D	1/19/1995	<b>200 J</b>	1.9	1.4	1.2	1.3
	MW-26D	10/10/2001	<b>52</b>	1.5	1.3	0.85	0.78
	MW-27D	10/8/1997	<b>280</b>	0.72	0.46 J	0.58	0.63
	MW-49	12/21/2000	<b>340 D</b>	3.4	2.9	2.4	1.8
Toe of Plume: Other Toe	AMW-42	5/10/1999	<b>73</b>	--	1.3	--	0.88
	AMW-63	10/15/2009	0.17 J	0.10 J	0.17 J	--	0.50 U
	MW-31	5/12/1998	<b>32</b>	--	0.30 J	--	0.20 J
	<b>MW-35</b>	9/14/1999	<b>110 D</b>	<b>5.5</b>	<b>6.8</b>	<b>5.3</b>	<b>6.3</b>
	MW-41	10/19/2004	<b>8.3</b>	0.50 U	0.50 U	--	0.50 U

## B1. Summary of Recent Trichloroethene Concentrations

Well Group	Well	Historical Maximum		Spring 2009	Fall 2009	Spring 2010	Fall 2010
		Date	Result				
Troutdale Aquifer	<b>AMW-24</b>	10/7/1999	<b>25</b>	--	<b>13</b>	--	<b>13</b>
	AMW-25	10/22/2008	0.50 U	--	--	--	0.50 U
	AMW-50	10/22/2008	0.50 U	--	--	--	0.50 U
	AMW-51	10/23/2008	0.11 J	--	--	--	0.17 J
	AMW-62	10/15/2009	0.50 U	--	0.50 U	--	0.50 U
	<b>BENNETT</b>	4/28/2010	<b>10</b>	<b>9.5</b>	<b>10</b>	<b>10</b>	<b>8.6</b>
	CPU-2	10/27/2008	0.5 U	--	--	--	0.50 U
	CPU-3D	10/23/2008	0.5 U	--	--	--	0.50 U
	CPU-10	10/27/2008	0.5 U	--	--	--	0.50 U
	<b>MW-33</b>	10/8/2001	<b>19</b>	--	<b>12</b>	--	<b>14</b>
	MW-34	10/23/2008	0.5 U	--	--	--	0.50 U

## NOTES:

Only wells sampled during Fall 2010 are included in this table.

Results are in micrograms per liter ( $\mu\text{g}/\text{L}$ ).

J = The result is an estimated concentration that is less than the Method Reporting Limit but greater than or equal to the Method Detection Limit.

-- = Well not sampled during that monitoring event.

\* = Well is in the Northern Plume Area.

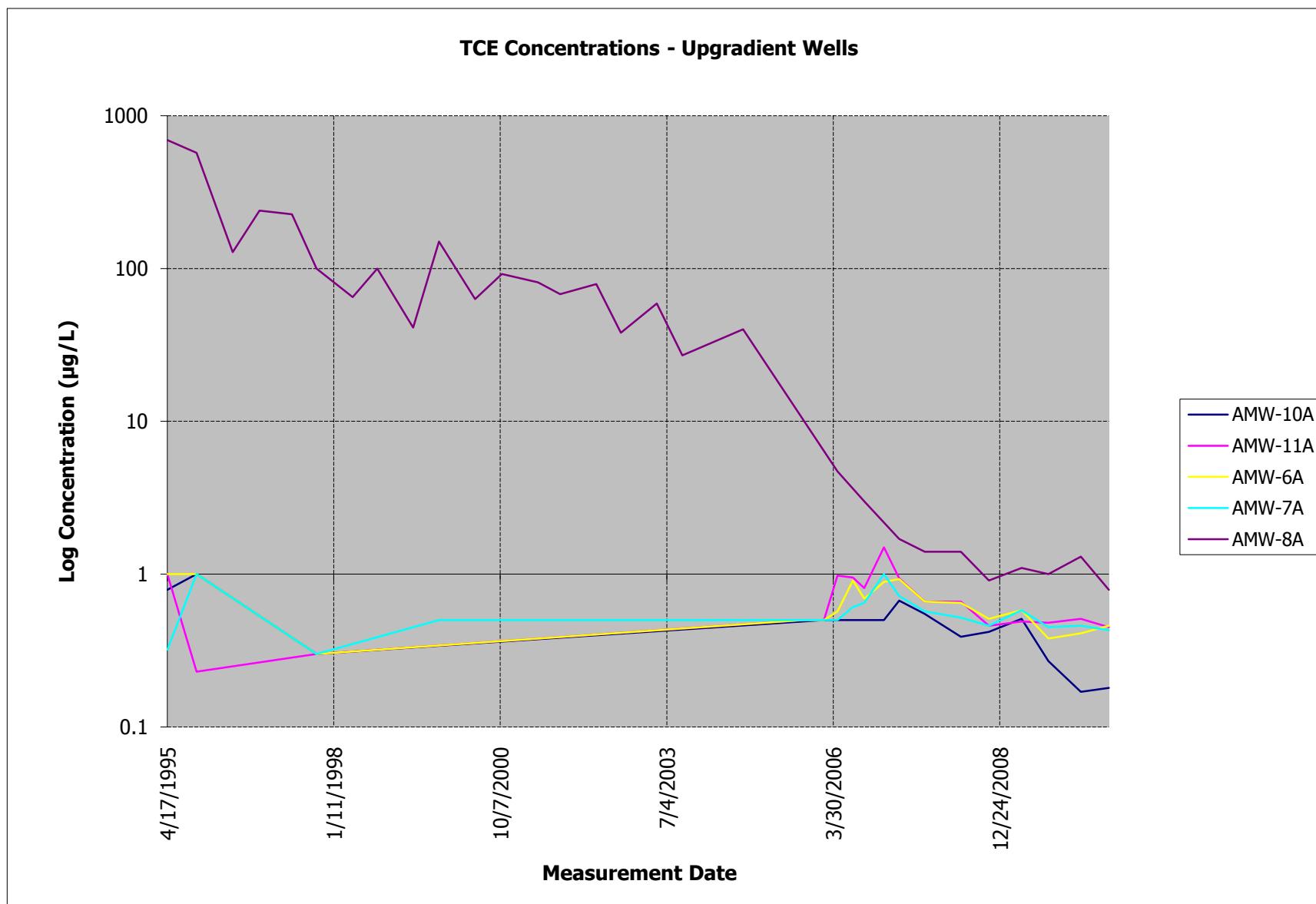
U = Analyte not detected above the specified reporting limit.

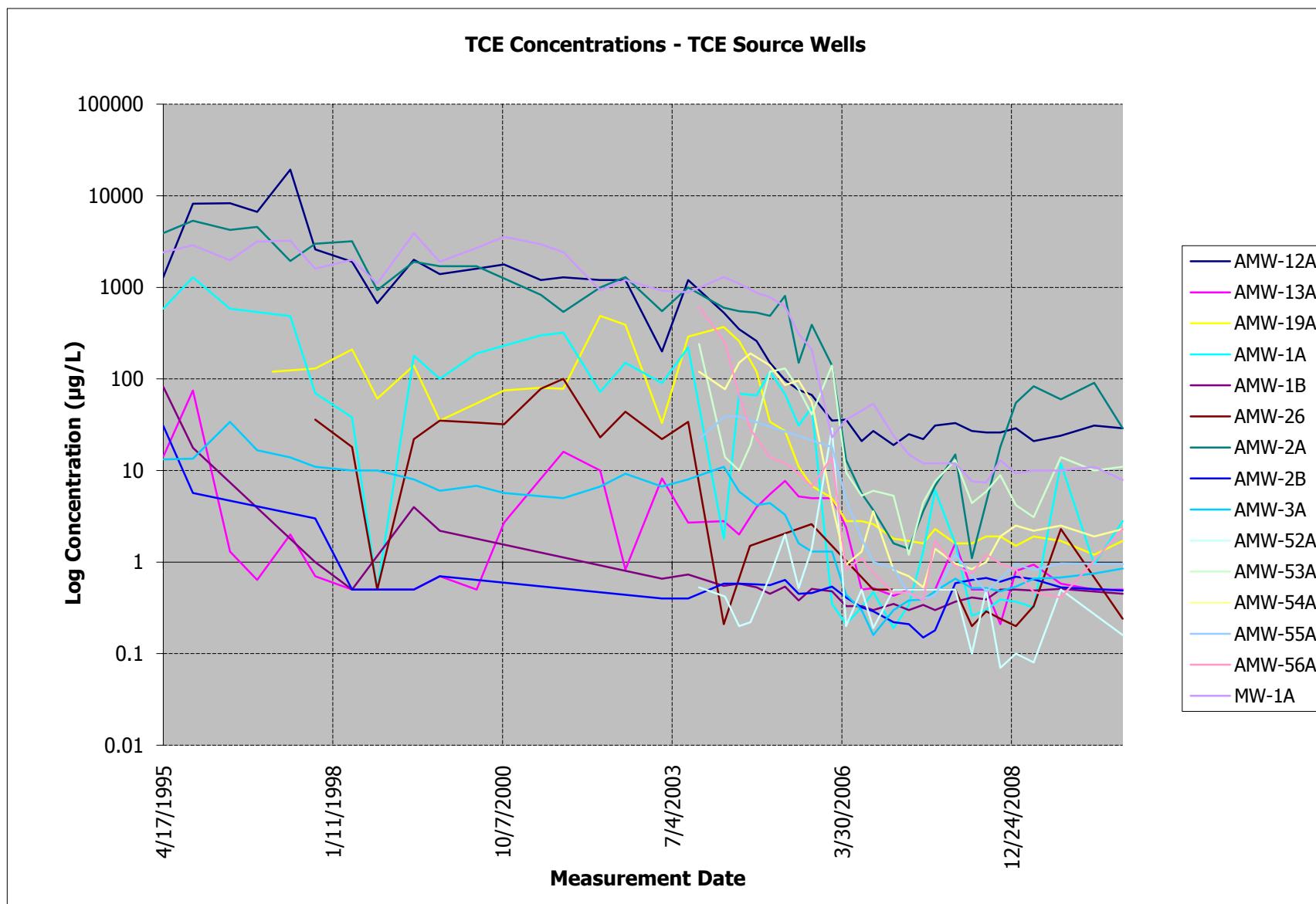
Results shown in red are above the cleanup level of 5  $\mu\text{g}/\text{L}$ .

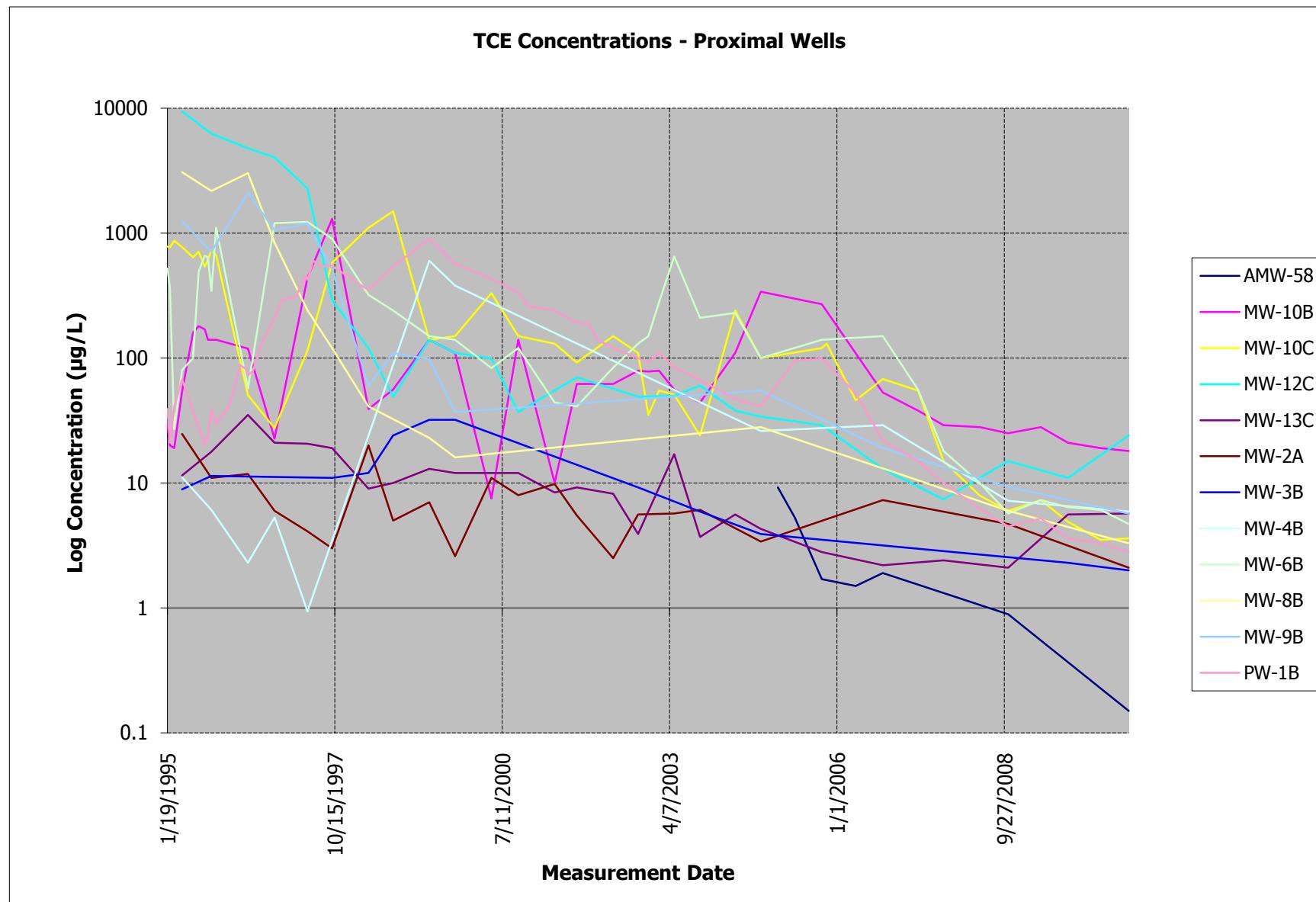
Wells shown in red were above the cleanup level of 5  $\mu\text{g}/\text{L}$  during the 2010 reporting period.

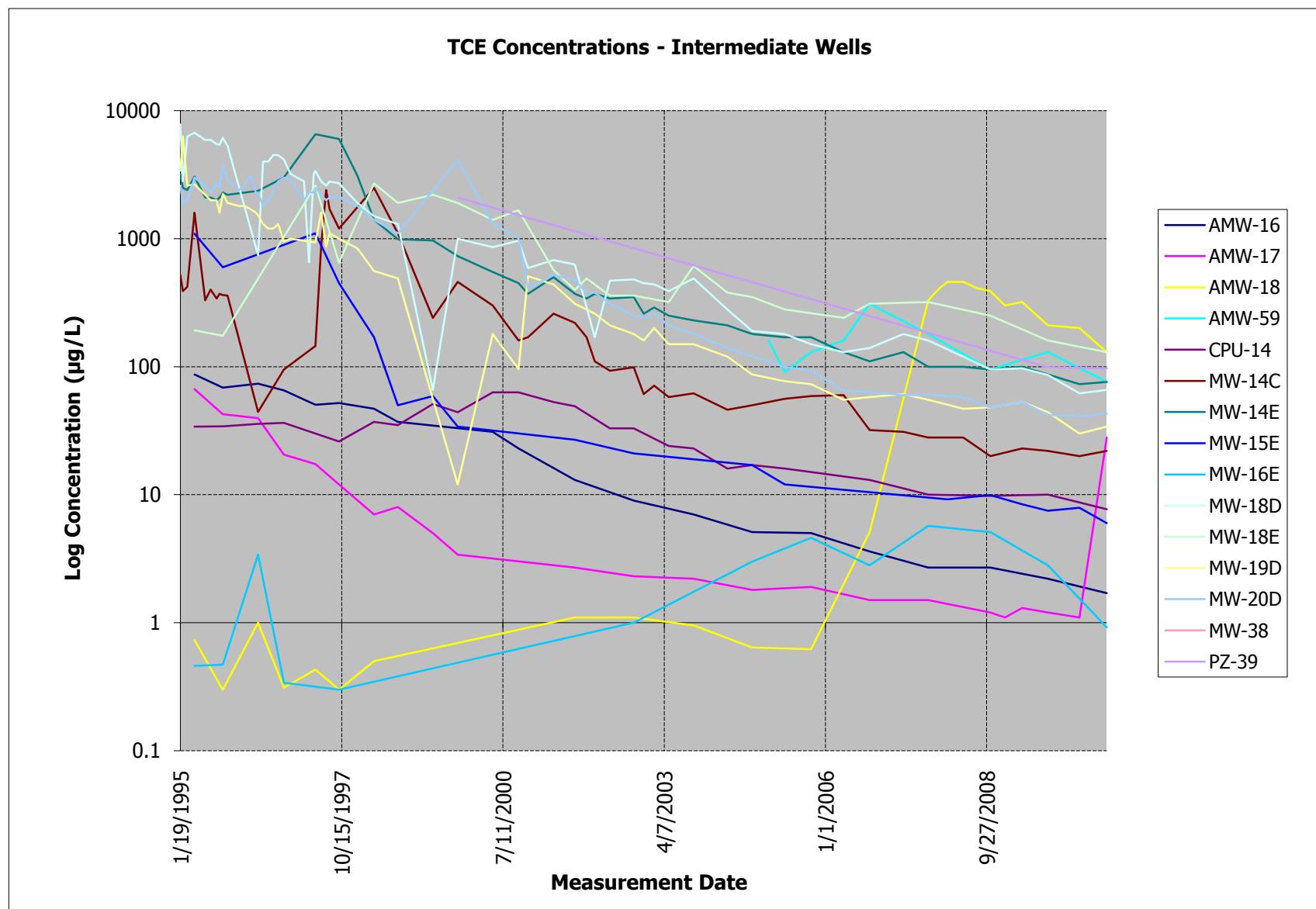
## **APPENDIX B-2**

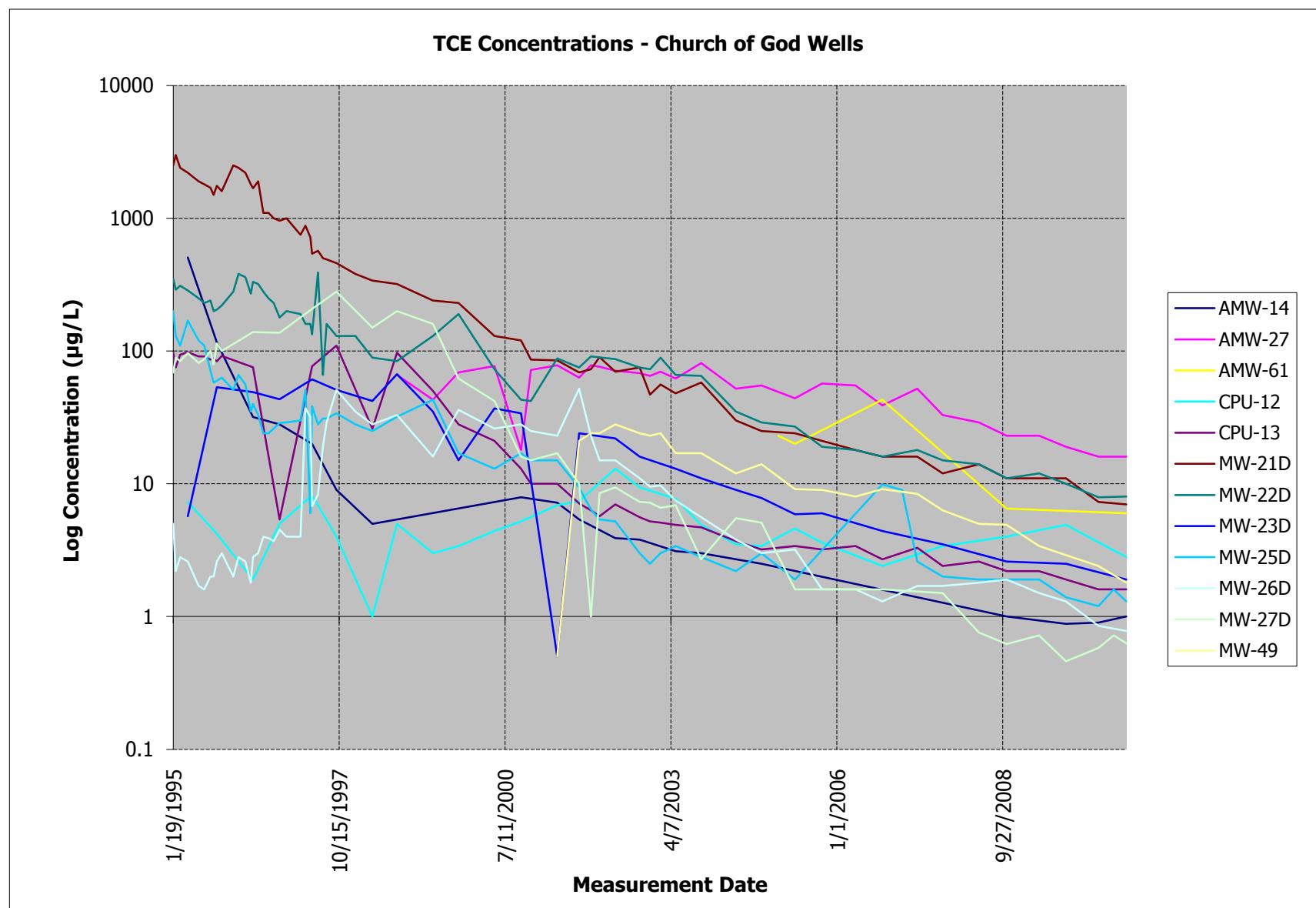
### **TCE CONCENTRATIONS – BY WELL GROUPING**

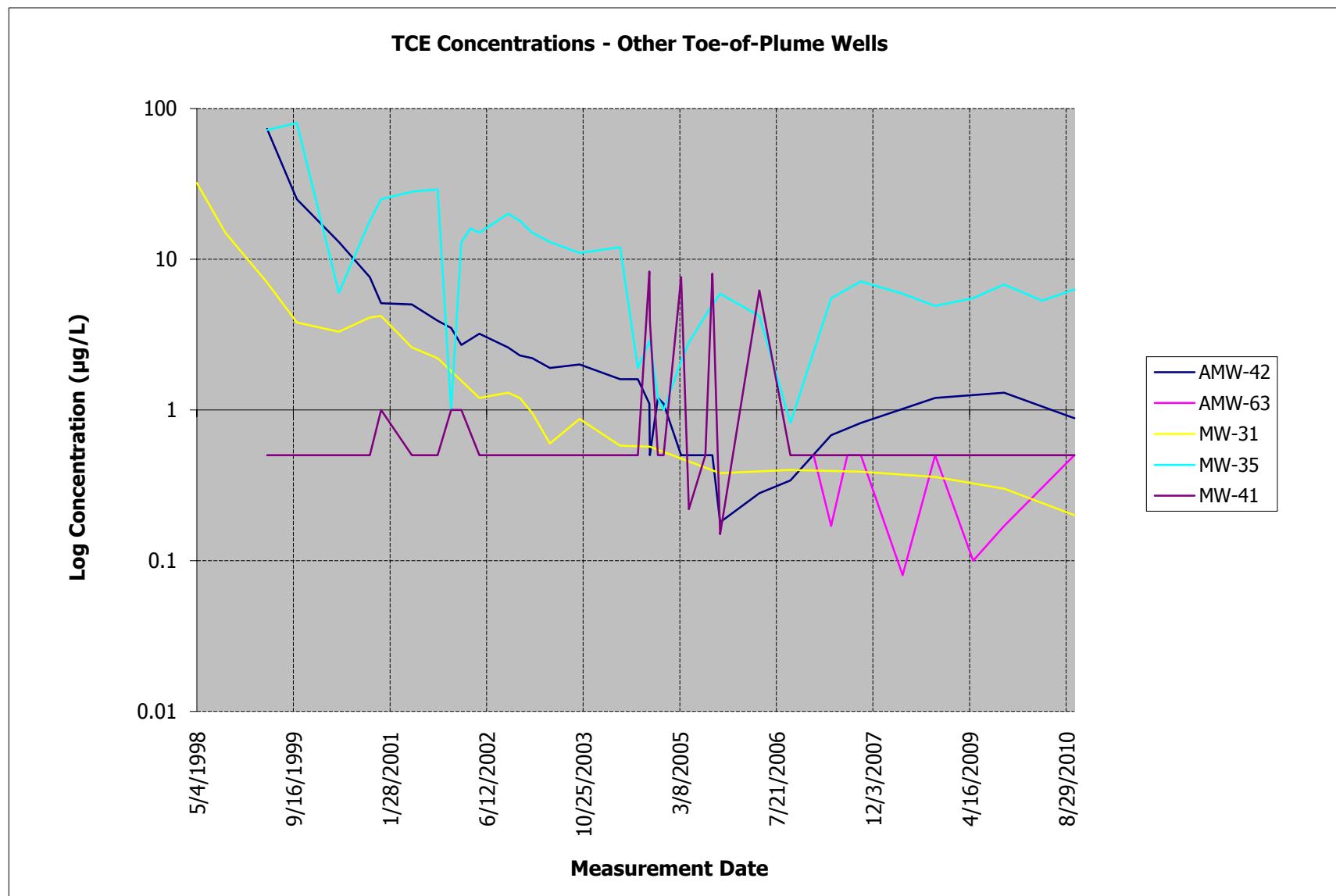


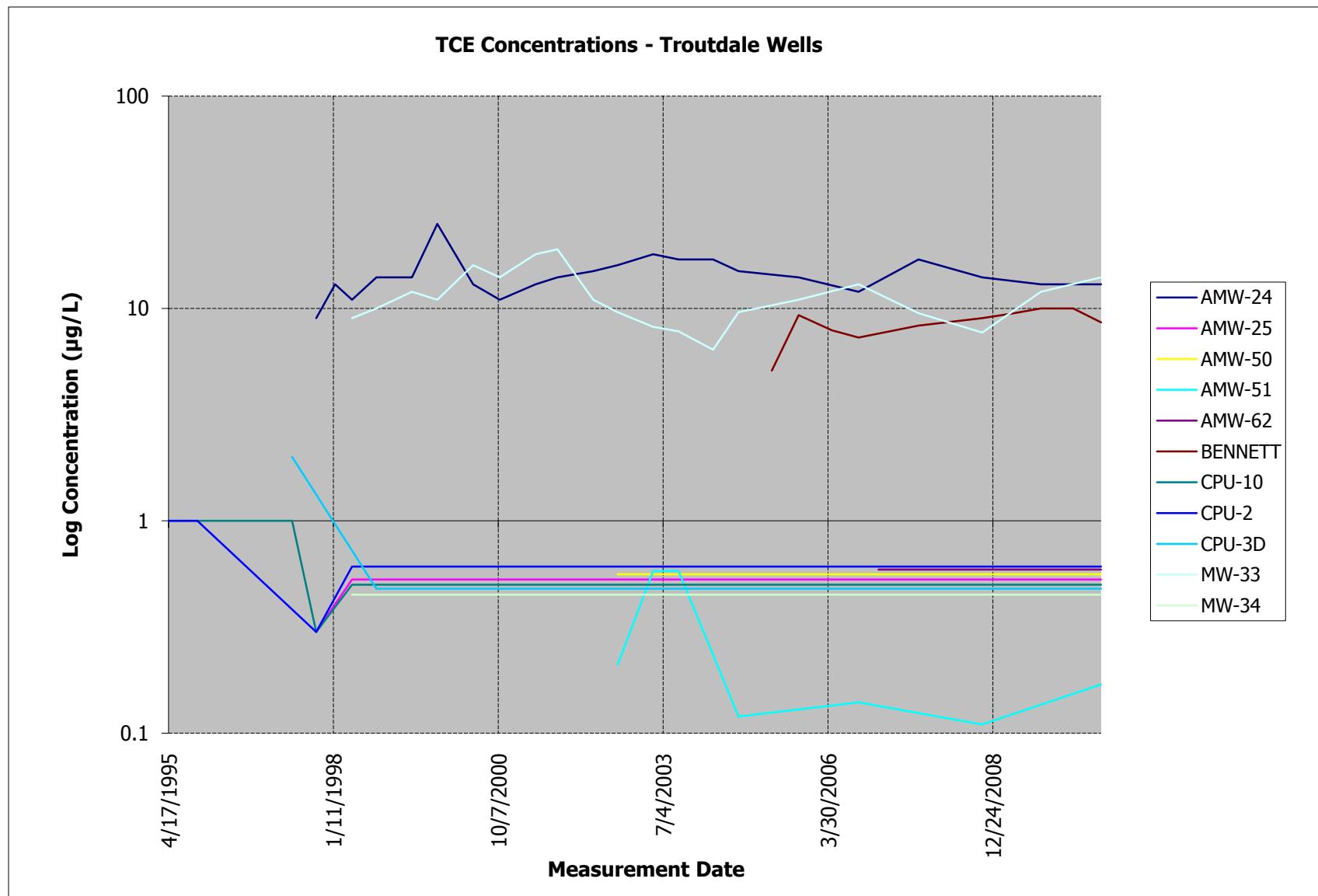












## **APPENDIX B-3**

### **TCE CONCENTRATIONS – INDIVIDUAL WELLS**

## APPENDIX B-3 TABLE OF CONTENTS

	<u>Page</u>
<b>Upgradient Wells</b>	
AMW-6A .....	1
AMW-7A .....	2
AMW-8A .....	3
AMW-10A .....	4
AMW-11A .....	5
<b>TCE Source Wells</b>	
AMW-1A .....	1
AMW-1B .....	2
AMW-2A .....	3
AMW-2B .....	4
AMW-3A .....	5
AMW-12A .....	6
AMW-13A .....	7
AMW-19A .....	8
AMW-26 .....	9
AMW-52A .....	10
AMW-53A .....	11
AMW-54A .....	12
AMW-55A .....	13
AMW-56A .....	14
MW-1A .....	15
<b>Proximal Wells</b>	
AMW-58 .....	1
MW-2A .....	2
MW-2B .....	3
MW-3A .....	4
MW-3B .....	5
MW-4A .....	6
MW-4B .....	7
MW-4BShed .....	8
MW-6A .....	9
MW-6B .....	10
MW-6C .....	11
MW-6D .....	12
MW-7B .....	13
MW-8B .....	14
MW-9B .....	15
MW-9C .....	16

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MW-10B .....	17
MW-10C .....	18
MW-12C .....	19
MW-13C .....	20
PW-1B.....	21

**Intermediate Wells**

AMW-16.....	1
AMW-17 .....	2
AMW-18 .....	3
AMW-59 .....	4
CPU-14 .....	5
MW-14C .....	6
MW-14E .....	7
MW-15E .....	8
MW-16E .....	9
MW-18D .....	10
MW-18E .....	11
MW-19D .....	12
MW-20D .....	13

**Church of God Wells**

AMW-14 .....	1
AMW-27 .....	2
AMW-61 .....	3
CPU-12 .....	4
CPU-13 .....	5
MW-21D .....	6
MW-22D .....	7
MW-23D .....	8
MW-25D .....	9
MW-26D .....	10
MW-27D .....	11
MW-49 .....	12

**Toe of Plume – Other Toe Wells**

AMW-42 .....	1
AMW-63 .....	2
MW-31 .....	3
MW-35 .....	4
MW-41 .....	5

**Troutdale Wells**

AMW-24 .....	1
AMW-25 .....	2
AMW-50 .....	3

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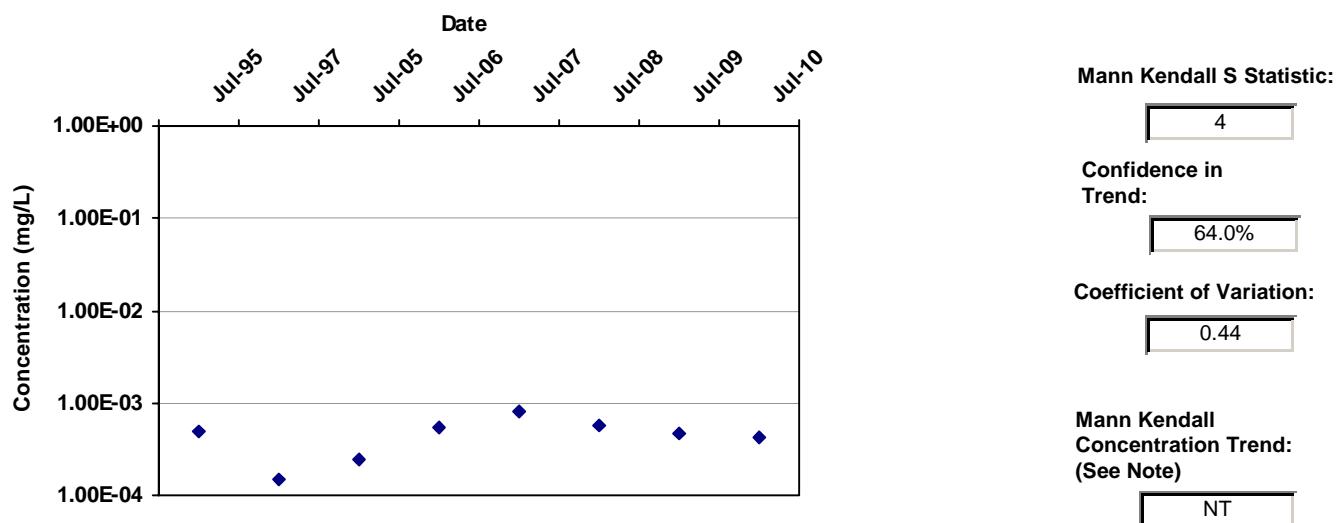
AMW-51 .....	4
AMW-62.....	5
BENNETT .....	6
CPU-2 .....	7
CPU-3D.....	8
CPU-10 .....	9
MW-33.....	10
MW-34.....	11

## **UPGRADIENT WELLS**

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-6A  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

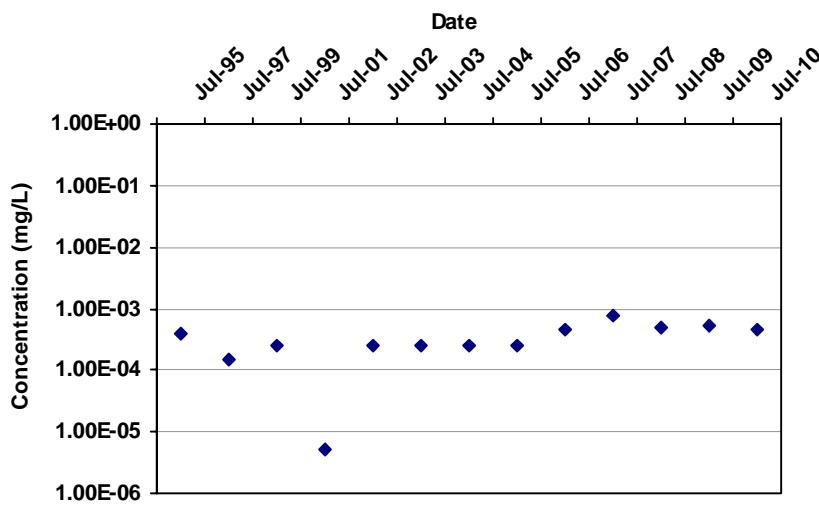
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-6A	T	7/1/1995	TRICHLOROETHYLENE (TCE)	5.0E-04	ND	2	0
AMW-6A	T	7/1/1997	TRICHLOROETHYLENE (TCE)	1.5E-04	ND	1	0
AMW-6A	T	7/1/2005	TRICHLOROETHYLENE (TCE)	2.5E-04	ND	1	0
AMW-6A	T	7/1/2006	TRICHLOROETHYLENE (TCE)	5.5E-04		4	3
AMW-6A	T	7/1/2007	TRICHLOROETHYLENE (TCE)	8.2E-04		3	3
AMW-6A	T	7/1/2008	TRICHLOROETHYLENE (TCE)	5.8E-04		2	2
AMW-6A	T	7/1/2009	TRICHLOROETHYLENE (TCE)	4.7E-04		2	2
AMW-6A	T	7/1/2010	TRICHLOROETHYLENE (TCE)	4.3E-04		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-7A  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



**Mann Kendall S Statistic:**

38

**Confidence in Trend:**

98.9%

**Coefficient of Variation:**

0.55

**Mann Kendall Concentration Trend: (See Note)**

I

## Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-7A	T	7/1/1995	TRICHLOROETHYLENE (TCE)	4.0E-04		2	1
AMW-7A	T	7/1/1997	TRICHLOROETHYLENE (TCE)	1.5E-04	ND	1	0
AMW-7A	T	7/1/1999	TRICHLOROETHYLENE (TCE)	2.5E-04	ND	1	0
AMW-7A	T	7/1/2001	TRICHLOROETHYLENE (TCE)	5.0E-06	ND	2	0
AMW-7A	T	7/1/2002	TRICHLOROETHYLENE (TCE)	2.5E-04	ND	2	0
AMW-7A	T	7/1/2003	TRICHLOROETHYLENE (TCE)	2.5E-04	ND	2	0
AMW-7A	T	7/1/2004	TRICHLOROETHYLENE (TCE)	2.5E-04	ND	2	0
AMW-7A	T	7/1/2005	TRICHLOROETHYLENE (TCE)	2.5E-04	ND	1	0
AMW-7A	T	7/1/2006	TRICHLOROETHYLENE (TCE)	4.7E-04		4	3
AMW-7A	T	7/1/2007	TRICHLOROETHYLENE (TCE)	7.4E-04		3	3
AMW-7A	T	7/1/2008	TRICHLOROETHYLENE (TCE)	4.9E-04		2	2
AMW-7A	T	7/1/2009	TRICHLOROETHYLENE (TCE)	5.1E-04		2	2
AMW-7A	T	7/1/2010	TRICHLOROETHYLENE (TCE)	4.4E-04		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-8A

**Time Period:** 1/19/1995    to    10/20/2010

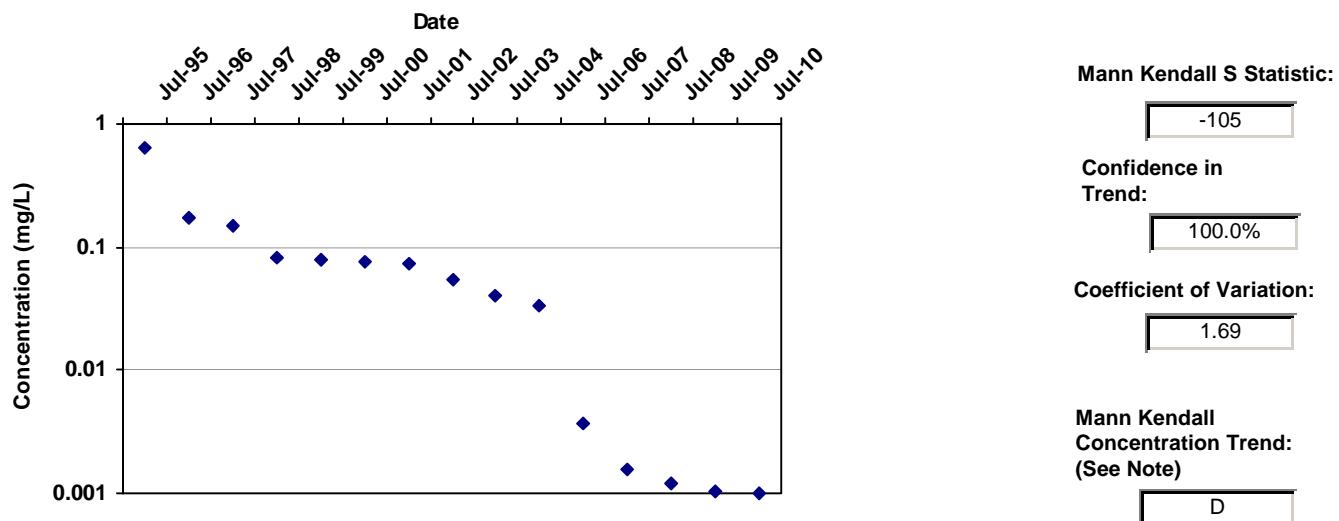
**Consolidation Period:** Yearly

**Consolidation Type:** Geometric Mean

**Duplicate Consolidation:** Maximum

**ND Values:** 1/2 Detection Limit

**J Flag Values :** Actual Value



## Data Table:

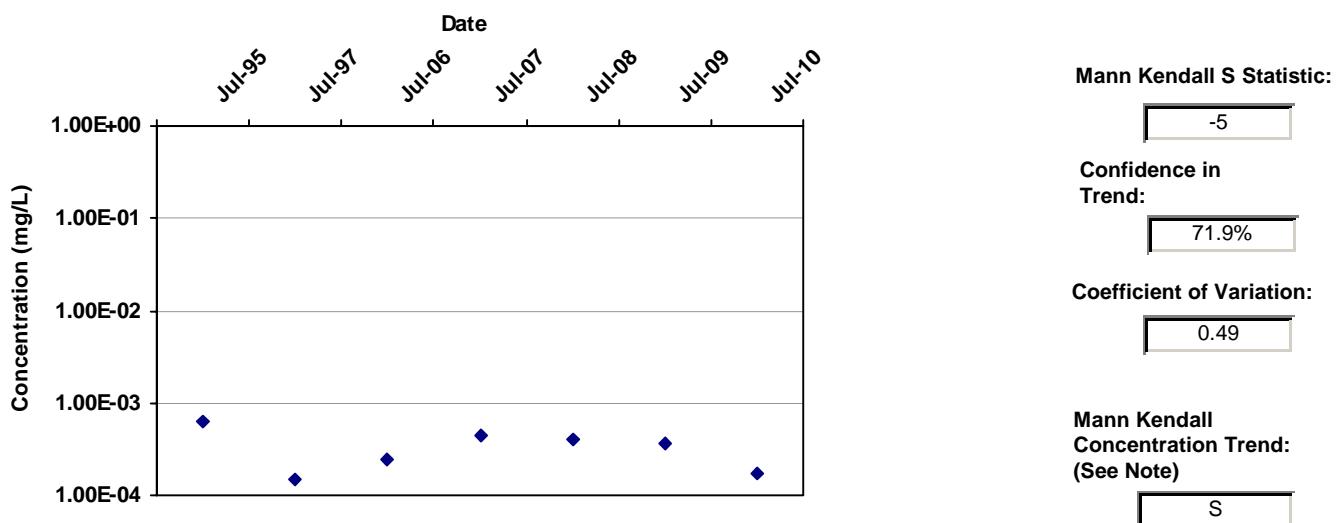
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-8A	T	7/1/1995	TRICHLOROETHYLENE (TCE)	6.3E-01		2	2
AMW-8A	T	7/1/1996	TRICHLOROETHYLENE (TCE)	1.7E-01		2	2
AMW-8A	T	7/1/1997	TRICHLOROETHYLENE (TCE)	1.5E-01		2	2
AMW-8A	T	7/1/1998	TRICHLOROETHYLENE (TCE)	8.1E-02		2	2
AMW-8A	T	7/1/1999	TRICHLOROETHYLENE (TCE)	7.8E-02		2	2
AMW-8A	T	7/1/2000	TRICHLOROETHYLENE (TCE)	7.6E-02		2	2
AMW-8A	T	7/1/2001	TRICHLOROETHYLENE (TCE)	7.4E-02		2	2
AMW-8A	T	7/1/2002	TRICHLOROETHYLENE (TCE)	5.5E-02		2	2
AMW-8A	T	7/1/2003	TRICHLOROETHYLENE (TCE)	4.0E-02		2	2
AMW-8A	T	7/1/2004	TRICHLOROETHYLENE (TCE)	3.4E-02		2	2
AMW-8A	T	7/1/2006	TRICHLOROETHYLENE (TCE)	3.8E-03		2	2
AMW-8A	T	7/1/2007	TRICHLOROETHYLENE (TCE)	1.5E-03		2	2
AMW-8A	T	7/1/2008	TRICHLOROETHYLENE (TCE)	1.2E-03		3	3
AMW-8A	T	7/1/2009	TRICHLOROETHYLENE (TCE)	1.0E-03		2	2
AMW-8A	T	7/1/2010	TRICHLOROETHYLENE (TCE)	1.0E-03		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-10A  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

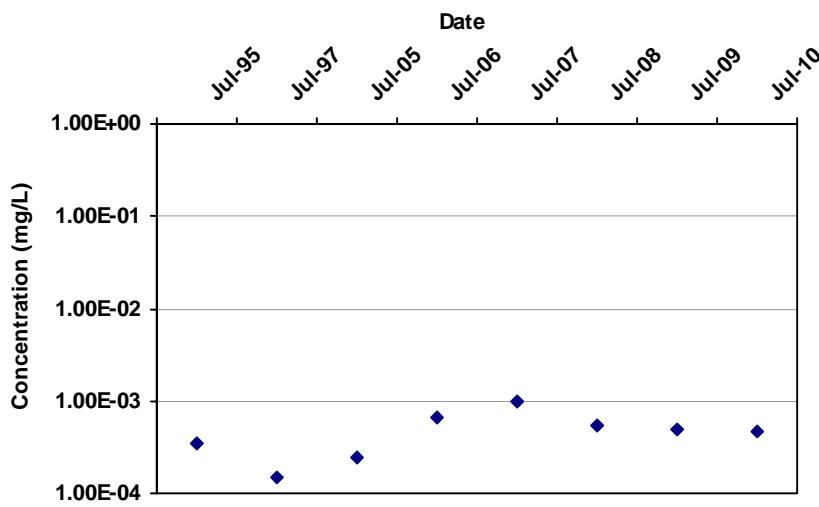
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-10A	T	7/1/1995	TRICHLOROETHYLENE (TCE)	6.3E-04		2	1
AMW-10A	T	7/1/1997	TRICHLOROETHYLENE (TCE)	1.5E-04	ND	1	0
AMW-10A	T	7/1/2006	TRICHLOROETHYLENE (TCE)	2.5E-04	ND	4	0
AMW-10A	T	7/1/2007	TRICHLOROETHYLENE (TCE)	4.5E-04		3	2
AMW-10A	T	7/1/2008	TRICHLOROETHYLENE (TCE)	4.0E-04		2	2
AMW-10A	T	7/1/2009	TRICHLOROETHYLENE (TCE)	3.7E-04		2	2
AMW-10A	T	7/1/2010	TRICHLOROETHYLENE (TCE)	1.7E-04		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-11A  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



**Mann Kendall S Statistic:** 6  
**Confidence in Trend:** 72.6%  
**Coefficient of Variation:** 0.53  
**Mann Kendall Concentration Trend: (See Note)** NT

## Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-11A	T	7/1/1995	TRICHLOROETHYLENE (TCE)	3.4E-04		2	1
AMW-11A	T	7/1/1997	TRICHLOROETHYLENE (TCE)	1.5E-04	ND	1	0
AMW-11A	T	7/1/2005	TRICHLOROETHYLENE (TCE)	2.5E-04	ND	1	0
AMW-11A	T	7/1/2006	TRICHLOROETHYLENE (TCE)	6.6E-04		4	3
AMW-11A	T	7/1/2007	TRICHLOROETHYLENE (TCE)	9.8E-04		3	3
AMW-11A	T	7/1/2008	TRICHLOROETHYLENE (TCE)	5.5E-04		2	2
AMW-11A	T	7/1/2009	TRICHLOROETHYLENE (TCE)	4.8E-04		2	2
AMW-11A	T	7/1/2010	TRICHLOROETHYLENE (TCE)	4.8E-04		2	2

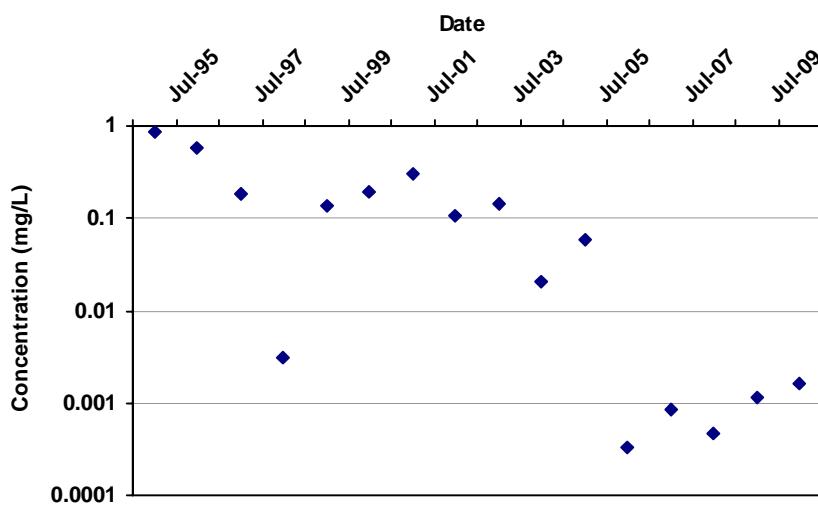
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

## **TCE SOURCE WELLS**

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-1A  
**Well Type:** S  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



**Mann Kendall S Statistic:** -72  
**Confidence in Trend:** 100.0%  
**Coefficient of Variation:** 1.50  
**Mann Kendall Concentration Trend: (See Note)** D

## Data Table:

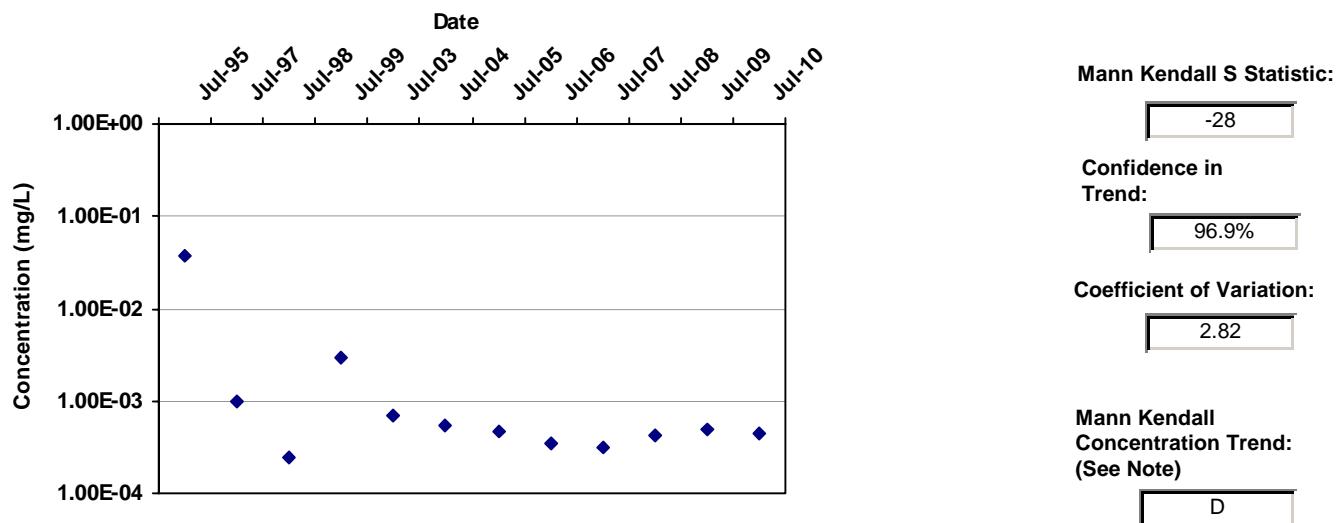
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-1A	S	7/1/1995	TRICHLOROETHYLENE (TCE)	8.7E-01		2	2
AMW-1A	S	7/1/1996	TRICHLOROETHYLENE (TCE)	5.9E-01		1	1
AMW-1A	S	7/1/1997	TRICHLOROETHYLENE (TCE)	1.8E-01		2	2
AMW-1A	S	7/1/1998	TRICHLOROETHYLENE (TCE)	3.1E-03		2	1
AMW-1A	S	7/1/1999	TRICHLOROETHYLENE (TCE)	1.3E-01		2	2
AMW-1A	S	7/1/2000	TRICHLOROETHYLENE (TCE)	1.9E-01		1	1
AMW-1A	S	7/1/2001	TRICHLOROETHYLENE (TCE)	3.1E-01		2	2
AMW-1A	S	7/1/2002	TRICHLOROETHYLENE (TCE)	1.0E-01		2	2
AMW-1A	S	7/1/2003	TRICHLOROETHYLENE (TCE)	1.4E-01		2	2
AMW-1A	S	7/1/2004	TRICHLOROETHYLENE (TCE)	2.0E-02		3	3
AMW-1A	S	7/1/2005	TRICHLOROETHYLENE (TCE)	5.9E-02		4	4
AMW-1A	S	7/1/2006	TRICHLOROETHYLENE (TCE)	3.2E-04		4	4
AMW-1A	S	7/1/2007	TRICHLOROETHYLENE (TCE)	8.5E-04		4	4
AMW-1A	S	7/1/2008	TRICHLOROETHYLENE (TCE)	4.7E-04		4	4
AMW-1A	S	7/1/2009	TRICHLOROETHYLENE (TCE)	1.1E-03		3	3
AMW-1A	S	7/1/2010	TRICHLOROETHYLENE (TCE)	1.6E-03		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-1B  
**Well Type:** S  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

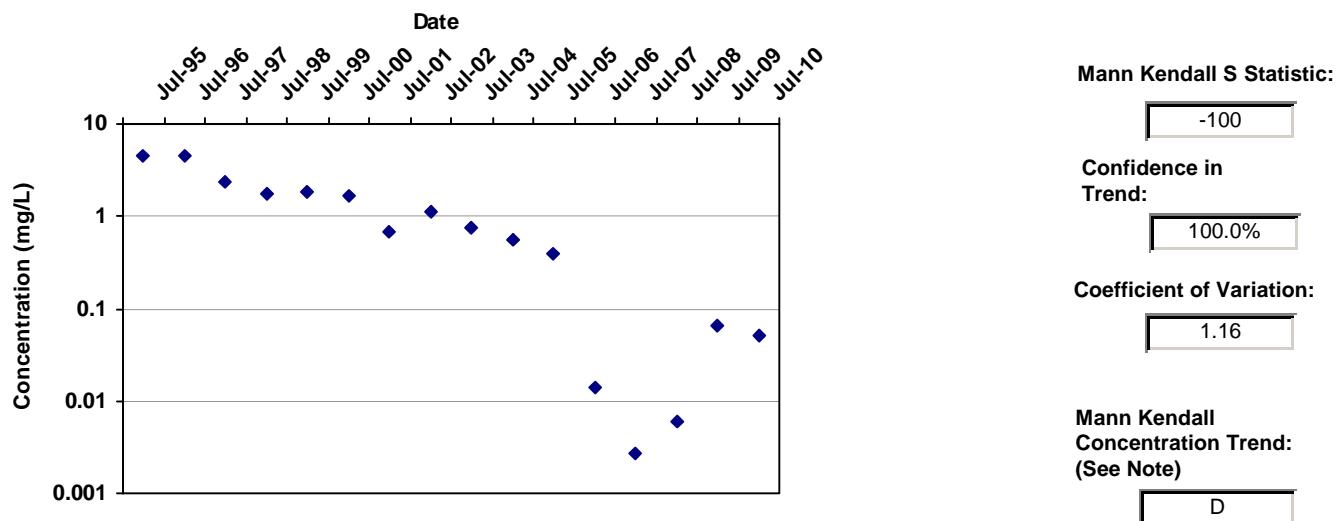
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-1B	S	7/1/1995	TRICHLOROETHYLENE (TCE)	3.8E-02		2	2
AMW-1B	S	7/1/1997	TRICHLOROETHYLENE (TCE)	1.0E-03		1	1
AMW-1B	S	7/1/1998	TRICHLOROETHYLENE (TCE)	2.5E-04		1	0
AMW-1B	S	7/1/1999	TRICHLOROETHYLENE (TCE)	3.0E-03		2	2
AMW-1B	S	7/1/2003	TRICHLOROETHYLENE (TCE)	6.9E-04		2	2
AMW-1B	S	7/1/2004	TRICHLOROETHYLENE (TCE)	5.5E-04		3	3
AMW-1B	S	7/1/2005	TRICHLOROETHYLENE (TCE)	4.7E-04		4	4
AMW-1B	S	7/1/2006	TRICHLOROETHYLENE (TCE)	3.5E-04		4	4
AMW-1B	S	7/1/2007	TRICHLOROETHYLENE (TCE)	3.2E-04		4	4
AMW-1B	S	7/1/2008	TRICHLOROETHYLENE (TCE)	4.1E-04		4	4
AMW-1B	S	7/1/2009	TRICHLOROETHYLENE (TCE)	5.0E-04		3	3
AMW-1B	S	7/1/2010	TRICHLOROETHYLENE (TCE)	4.5E-04		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-2A  
**Well Type:** S  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

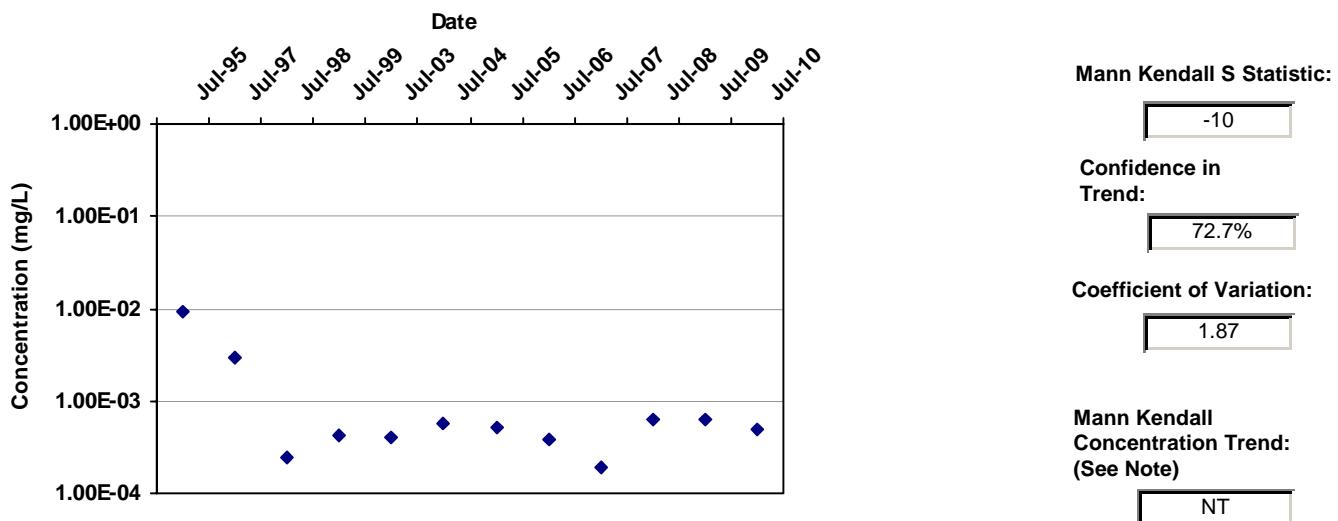
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-2A	S	7/1/1995	TRICHLOROETHYLENE (TCE)	4.6E+00		2	2
AMW-2A	S	7/1/1996	TRICHLOROETHYLENE (TCE)	4.4E+00		2	2
AMW-2A	S	7/1/1997	TRICHLOROETHYLENE (TCE)	2.4E+00		2	2
AMW-2A	S	7/1/1998	TRICHLOROETHYLENE (TCE)	1.7E+00		2	2
AMW-2A	S	7/1/1999	TRICHLOROETHYLENE (TCE)	1.8E+00		2	2
AMW-2A	S	7/1/2000	TRICHLOROETHYLENE (TCE)	1.7E+00		1	1
AMW-2A	S	7/1/2001	TRICHLOROETHYLENE (TCE)	6.7E-01		2	2
AMW-2A	S	7/1/2002	TRICHLOROETHYLENE (TCE)	1.1E+00		2	2
AMW-2A	S	7/1/2003	TRICHLOROETHYLENE (TCE)	7.4E-01		2	2
AMW-2A	S	7/1/2004	TRICHLOROETHYLENE (TCE)	5.6E-01		3	3
AMW-2A	S	7/1/2005	TRICHLOROETHYLENE (TCE)	3.9E-01		4	4
AMW-2A	S	7/1/2006	TRICHLOROETHYLENE (TCE)	1.4E-02		4	4
AMW-2A	S	7/1/2007	TRICHLOROETHYLENE (TCE)	2.7E-03		4	4
AMW-2A	S	7/1/2008	TRICHLOROETHYLENE (TCE)	6.0E-03		4	4
AMW-2A	S	7/1/2009	TRICHLOROETHYLENE (TCE)	6.5E-02		3	3
AMW-2A	S	7/1/2010	TRICHLOROETHYLENE (TCE)	5.1E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-2B  
**Well Type:** S  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

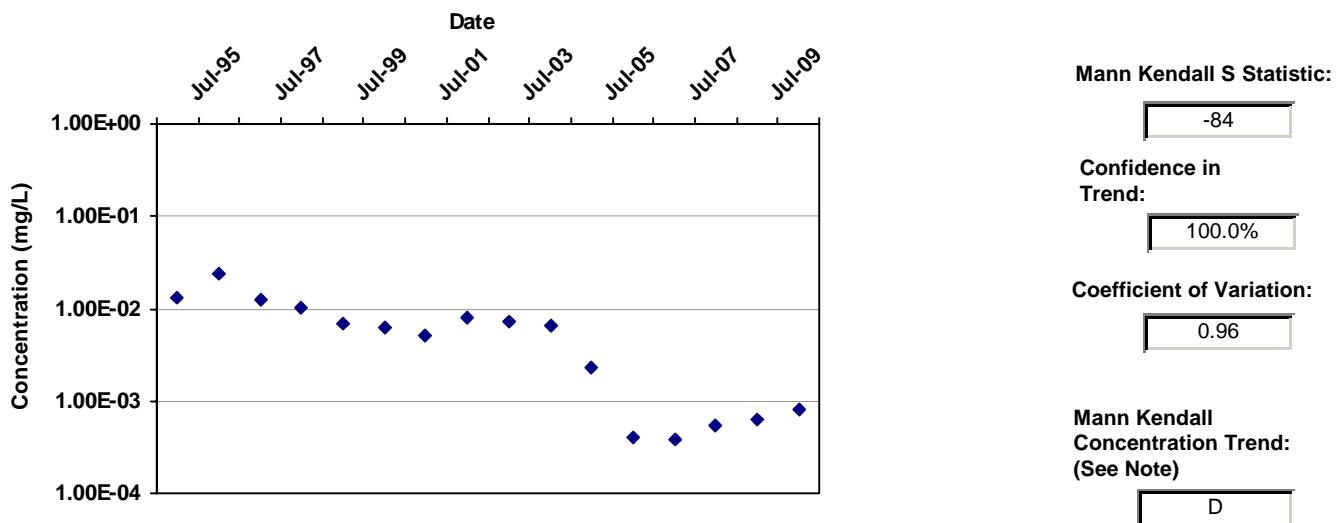
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-2B	S	7/1/1995	TRICHLOROETHYLENE (TCE)	9.4E-03		2	1
AMW-2B	S	7/1/1997	TRICHLOROETHYLENE (TCE)	3.0E-03		1	1
AMW-2B	S	7/1/1998	TRICHLOROETHYLENE (TCE)	2.5E-04		2	0
AMW-2B	S	7/1/1999	TRICHLOROETHYLENE (TCE)	4.2E-04		2	1
AMW-2B	S	7/1/2003	TRICHLOROETHYLENE (TCE)	4.0E-04		2	2
AMW-2B	S	7/1/2004	TRICHLOROETHYLENE (TCE)	5.8E-04		3	3
AMW-2B	S	7/1/2005	TRICHLOROETHYLENE (TCE)	5.2E-04		4	4
AMW-2B	S	7/1/2006	TRICHLOROETHYLENE (TCE)	3.8E-04		4	4
AMW-2B	S	7/1/2007	TRICHLOROETHYLENE (TCE)	1.9E-04		4	4
AMW-2B	S	7/1/2008	TRICHLOROETHYLENE (TCE)	6.3E-04		4	4
AMW-2B	S	7/1/2009	TRICHLOROETHYLENE (TCE)	6.2E-04		3	3
AMW-2B	S	7/1/2010	TRICHLOROETHYLENE (TCE)	4.9E-04		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-3A  
**Well Type:** S  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

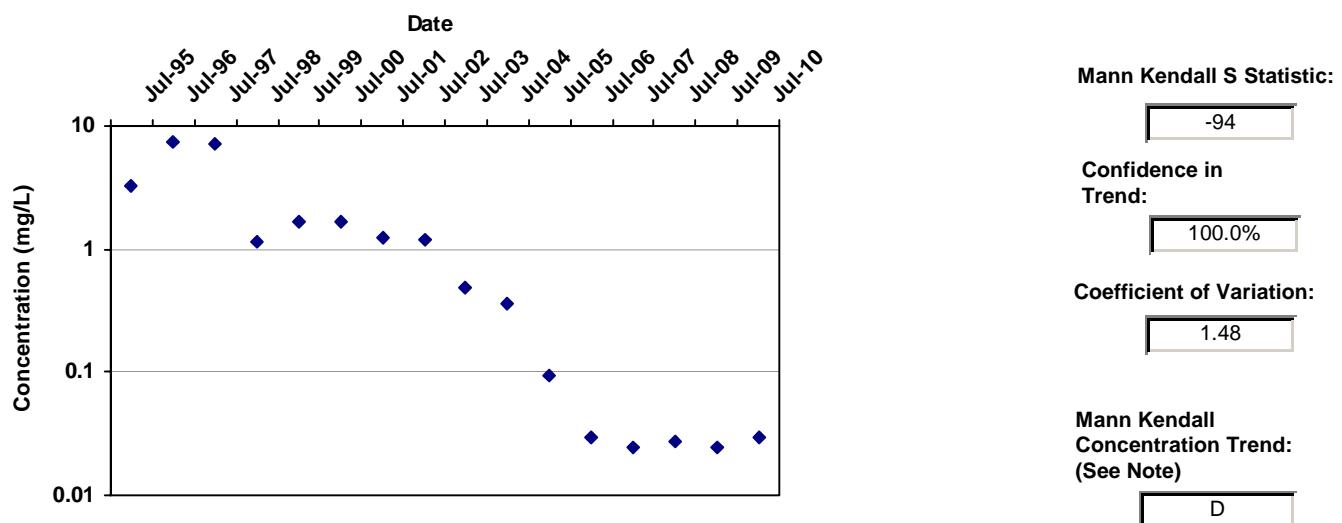
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-3A	S	7/1/1995	TRICHLOROETHYLENE (TCE)	1.3E-02		2	2
AMW-3A	S	7/1/1996	TRICHLOROETHYLENE (TCE)	2.4E-02		2	2
AMW-3A	S	7/1/1997	TRICHLOROETHYLENE (TCE)	1.2E-02		2	2
AMW-3A	S	7/1/1998	TRICHLOROETHYLENE (TCE)	1.0E-02		2	2
AMW-3A	S	7/1/1999	TRICHLOROETHYLENE (TCE)	6.9E-03		2	2
AMW-3A	S	7/1/2000	TRICHLOROETHYLENE (TCE)	6.2E-03		2	2
AMW-3A	S	7/1/2001	TRICHLOROETHYLENE (TCE)	5.0E-03		1	1
AMW-3A	S	7/1/2002	TRICHLOROETHYLENE (TCE)	7.9E-03		2	2
AMW-3A	S	7/1/2003	TRICHLOROETHYLENE (TCE)	7.3E-03		2	2
AMW-3A	S	7/1/2004	TRICHLOROETHYLENE (TCE)	6.5E-03		3	3
AMW-3A	S	7/1/2005	TRICHLOROETHYLENE (TCE)	2.3E-03		4	4
AMW-3A	S	7/1/2006	TRICHLOROETHYLENE (TCE)	4.1E-04		4	4
AMW-3A	S	7/1/2007	TRICHLOROETHYLENE (TCE)	3.8E-04		4	4
AMW-3A	S	7/1/2008	TRICHLOROETHYLENE (TCE)	5.4E-04		4	4
AMW-3A	S	7/1/2009	TRICHLOROETHYLENE (TCE)	6.2E-04		3	3
AMW-3A	S	7/1/2010	TRICHLOROETHYLENE (TCE)	8.0E-04		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-12A  
**Well Type:** S  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

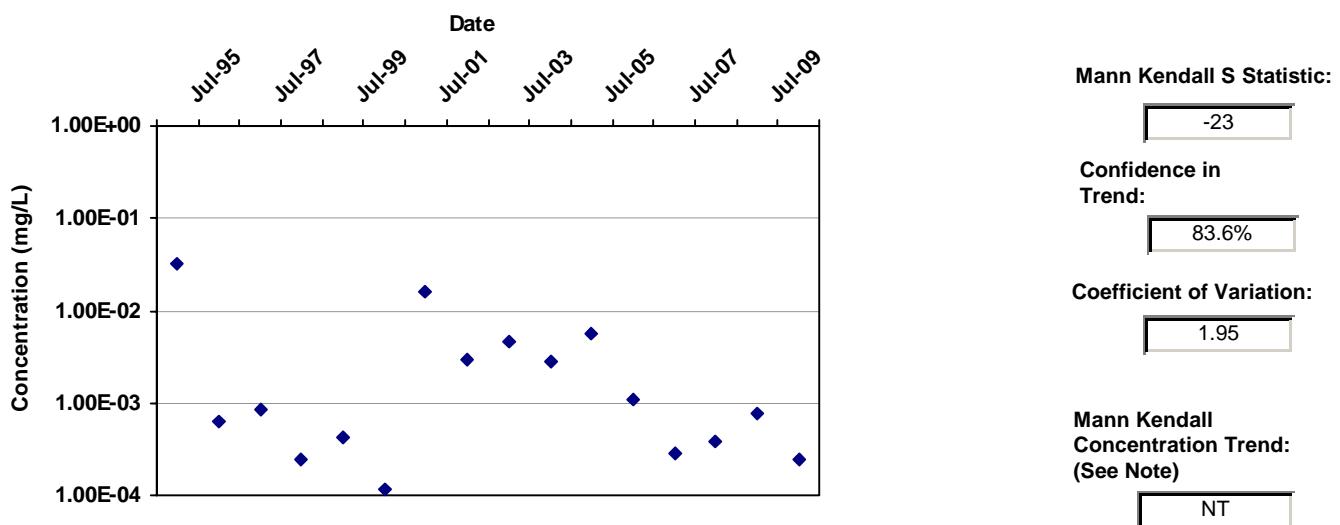
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-12A	S	7/1/1995	TRICHLOROETHYLENE (TCE)	3.3E+00		2	2
AMW-12A	S	7/1/1996	TRICHLOROETHYLENE (TCE)	7.5E+00		2	2
AMW-12A	S	7/1/1997	TRICHLOROETHYLENE (TCE)	7.1E+00		2	2
AMW-12A	S	7/1/1998	TRICHLOROETHYLENE (TCE)	1.1E+00		2	2
AMW-12A	S	7/1/1999	TRICHLOROETHYLENE (TCE)	1.7E+00		2	2
AMW-12A	S	7/1/2000	TRICHLOROETHYLENE (TCE)	1.7E+00		2	2
AMW-12A	S	7/1/2001	TRICHLOROETHYLENE (TCE)	1.2E+00		2	2
AMW-12A	S	7/1/2002	TRICHLOROETHYLENE (TCE)	1.2E+00		2	2
AMW-12A	S	7/1/2003	TRICHLOROETHYLENE (TCE)	4.9E-01		2	2
AMW-12A	S	7/1/2004	TRICHLOROETHYLENE (TCE)	3.6E-01		3	3
AMW-12A	S	7/1/2005	TRICHLOROETHYLENE (TCE)	9.3E-02		4	4
AMW-12A	S	7/1/2006	TRICHLOROETHYLENE (TCE)	2.9E-02		4	4
AMW-12A	S	7/1/2007	TRICHLOROETHYLENE (TCE)	2.4E-02		4	4
AMW-12A	S	7/1/2008	TRICHLOROETHYLENE (TCE)	2.8E-02		4	4
AMW-12A	S	7/1/2009	TRICHLOROETHYLENE (TCE)	2.4E-02		3	3
AMW-12A	S	7/1/2010	TRICHLOROETHYLENE (TCE)	3.0E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-13A  
**Well Type:** S  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

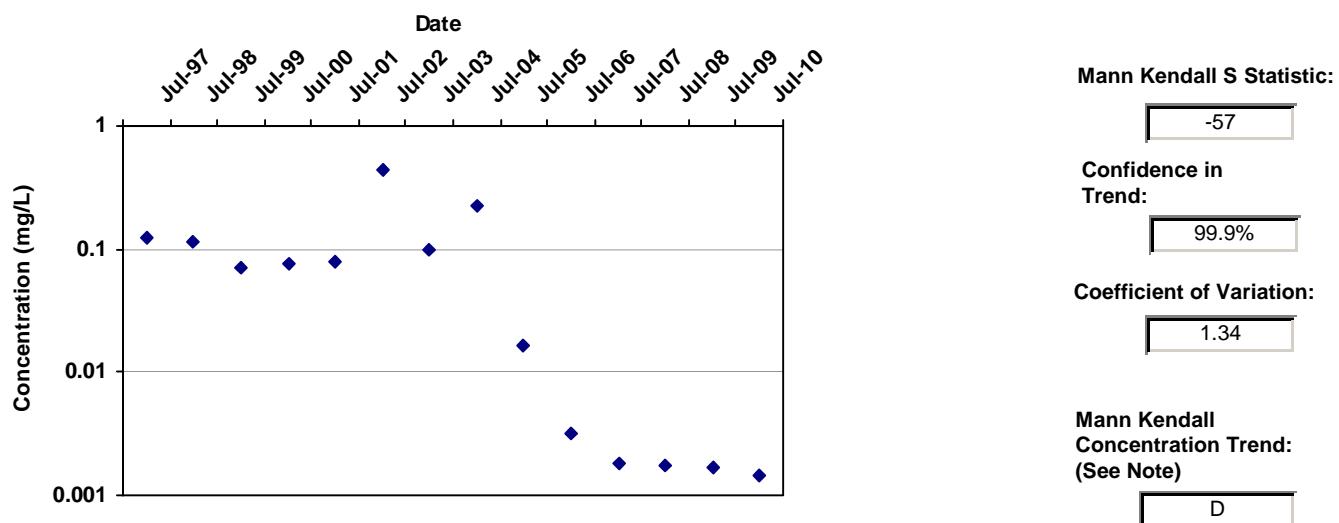
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-13A	S	7/1/1995	TRICHLOROETHYLENE (TCE)	3.3E-02		2	2
AMW-13A	S	7/1/1996	TRICHLOROETHYLENE (TCE)	6.4E-04		2	1
AMW-13A	S	7/1/1997	TRICHLOROETHYLENE (TCE)	8.4E-04		2	1
AMW-13A	S	7/1/1998	TRICHLOROETHYLENE (TCE)	2.5E-04		2	0
AMW-13A	S	7/1/1999	TRICHLOROETHYLENE (TCE)	4.2E-04		2	1
AMW-13A	S	7/1/2000	TRICHLOROETHYLENE (TCE)	1.2E-04		2	1
AMW-13A	S	7/1/2001	TRICHLOROETHYLENE (TCE)	1.6E-02		1	1
AMW-13A	S	7/1/2002	TRICHLOROETHYLENE (TCE)	2.9E-03		2	2
AMW-13A	S	7/1/2003	TRICHLOROETHYLENE (TCE)	4.7E-03		2	2
AMW-13A	S	7/1/2004	TRICHLOROETHYLENE (TCE)	2.8E-03		3	3
AMW-13A	S	7/1/2005	TRICHLOROETHYLENE (TCE)	5.8E-03		4	4
AMW-13A	S	7/1/2006	TRICHLOROETHYLENE (TCE)	1.1E-03		4	3
AMW-13A	S	7/1/2007	TRICHLOROETHYLENE (TCE)	2.9E-04		4	1
AMW-13A	S	7/1/2008	TRICHLOROETHYLENE (TCE)	3.8E-04		4	2
AMW-13A	S	7/1/2009	TRICHLOROETHYLENE (TCE)	7.6E-04		3	3
AMW-13A	S	7/1/2010	TRICHLOROETHYLENE (TCE)	2.5E-04	ND	2	0

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-19A  
**Well Type:** S  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

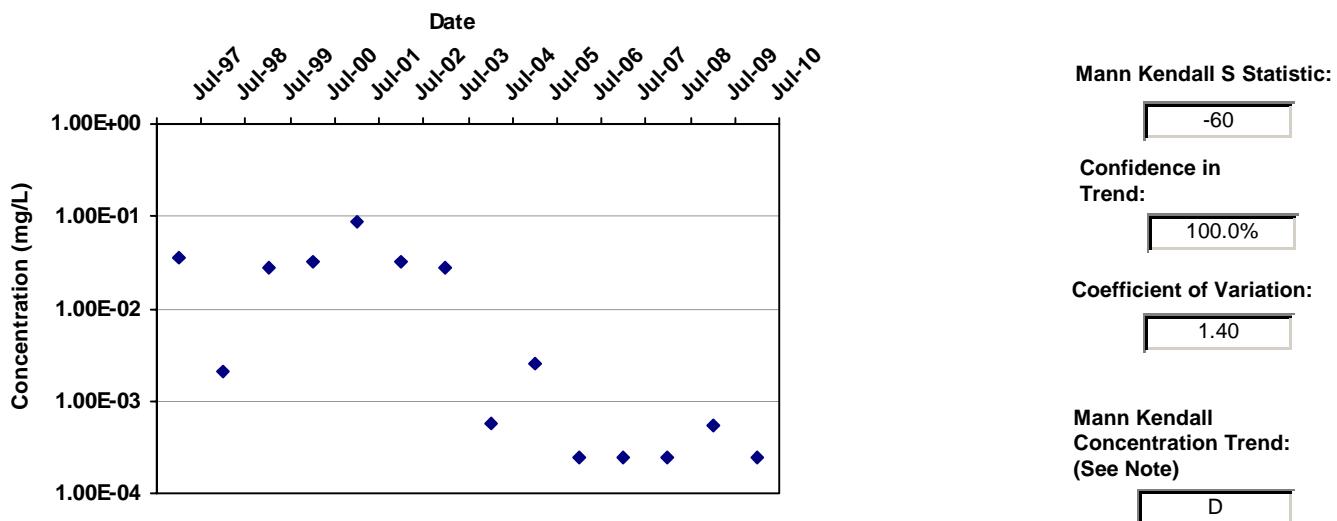
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-19A	S	7/1/1997	TRICHLOROETHYLENE (TCE)	1.2E-01		2	2
AMW-19A	S	7/1/1998	TRICHLOROETHYLENE (TCE)	1.1E-01		2	2
AMW-19A	S	7/1/1999	TRICHLOROETHYLENE (TCE)	7.0E-02		2	2
AMW-19A	S	7/1/2000	TRICHLOROETHYLENE (TCE)	7.5E-02		1	1
AMW-19A	S	7/1/2001	TRICHLOROETHYLENE (TCE)	7.9E-02		2	2
AMW-19A	S	7/1/2002	TRICHLOROETHYLENE (TCE)	4.4E-01		2	2
AMW-19A	S	7/1/2003	TRICHLOROETHYLENE (TCE)	9.8E-02		2	2
AMW-19A	S	7/1/2004	TRICHLOROETHYLENE (TCE)	2.3E-01		3	3
AMW-19A	S	7/1/2005	TRICHLOROETHYLENE (TCE)	1.6E-02		4	4
AMW-19A	S	7/1/2006	TRICHLOROETHYLENE (TCE)	3.2E-03		4	4
AMW-19A	S	7/1/2007	TRICHLOROETHYLENE (TCE)	1.8E-03		4	4
AMW-19A	S	7/1/2008	TRICHLOROETHYLENE (TCE)	1.7E-03		4	4
AMW-19A	S	7/1/2009	TRICHLOROETHYLENE (TCE)	1.7E-03		3	3
AMW-19A	S	7/1/2010	TRICHLOROETHYLENE (TCE)	1.4E-03		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-26  
**Well Type:** S  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

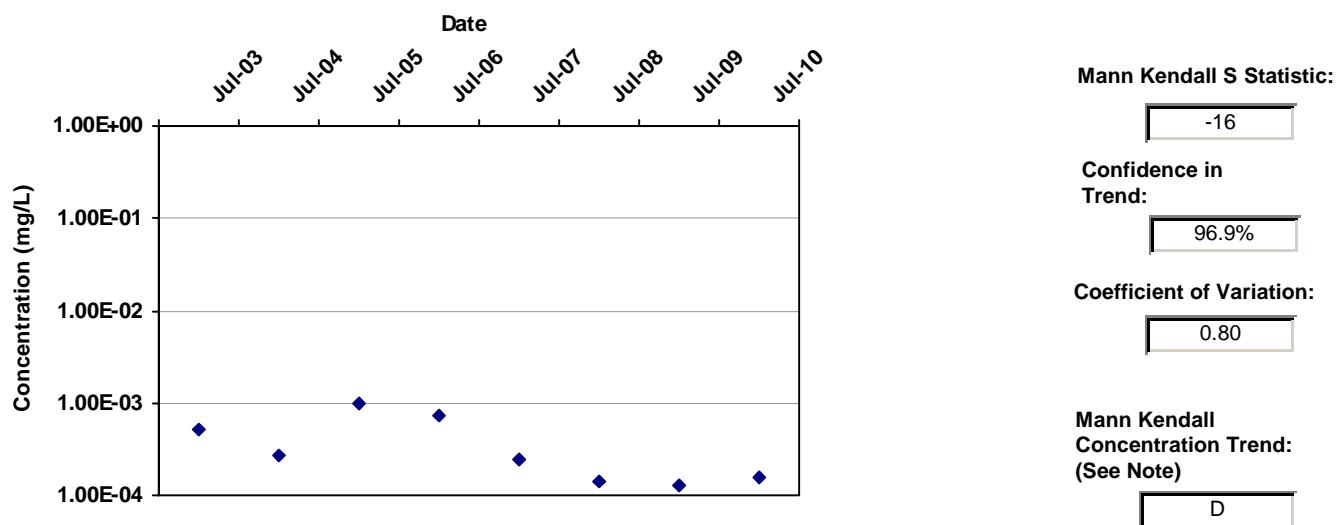
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-26	S	7/1/1997	TRICHLOROETHYLENE (TCE)	3.6E-02		1	1
AMW-26	S	7/1/1998	TRICHLOROETHYLENE (TCE)	2.1E-03		2	1
AMW-26	S	7/1/1999	TRICHLOROETHYLENE (TCE)	2.8E-02		2	2
AMW-26	S	7/1/2000	TRICHLOROETHYLENE (TCE)	3.3E-02		2	2
AMW-26	S	7/1/2001	TRICHLOROETHYLENE (TCE)	8.8E-02		2	2
AMW-26	S	7/1/2002	TRICHLOROETHYLENE (TCE)	3.2E-02		2	2
AMW-26	S	7/1/2003	TRICHLOROETHYLENE (TCE)	2.7E-02		2	2
AMW-26	S	7/1/2004	TRICHLOROETHYLENE (TCE)	5.6E-04		2	2
AMW-26	S	7/1/2005	TRICHLOROETHYLENE (TCE)	2.6E-03		1	1
AMW-26	S	7/1/2006	TRICHLOROETHYLENE (TCE)	2.5E-04	ND	1	0
AMW-26	S	7/1/2007	TRICHLOROETHYLENE (TCE)	2.5E-04	ND	1	0
AMW-26	S	7/1/2008	TRICHLOROETHYLENE (TCE)	2.4E-04		4	3
AMW-26	S	7/1/2009	TRICHLOROETHYLENE (TCE)	5.3E-04		3	3
AMW-26	S	7/1/2010	TRICHLOROETHYLENE (TCE)	2.4E-04		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-52A  
**Well Type:** S  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

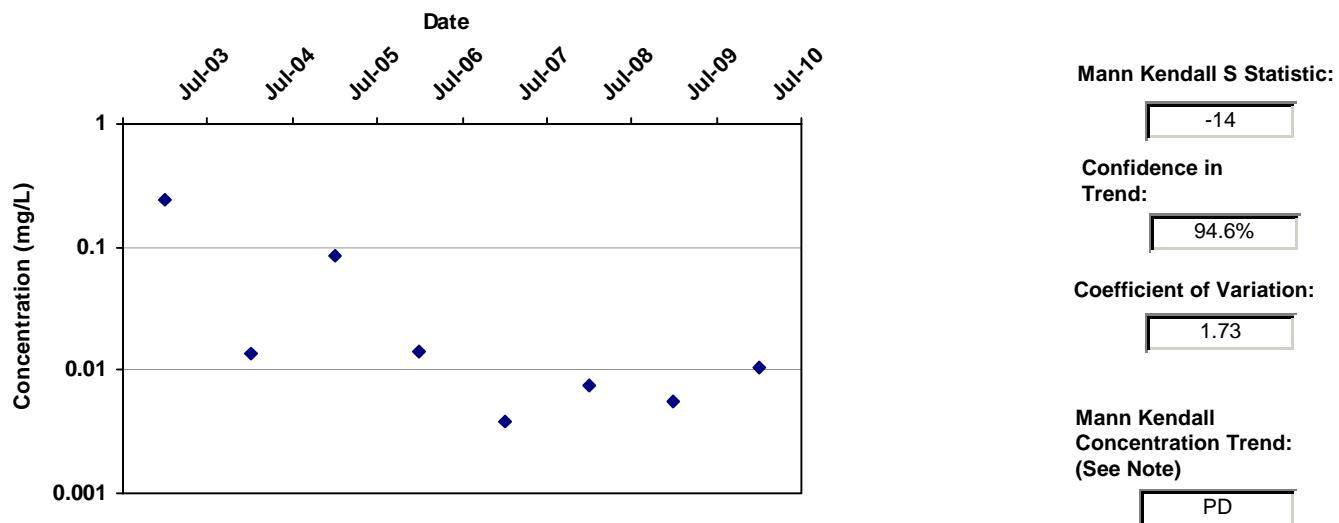
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-52A	S	7/1/2003	TRICHLOROETHYLENE (TCE)	5.3E-04		1	1
AMW-52A	S	7/1/2004	TRICHLOROETHYLENE (TCE)	2.6E-04		3	3
AMW-52A	S	7/1/2005	TRICHLOROETHYLENE (TCE)	1.0E-03		4	4
AMW-52A	S	7/1/2006	TRICHLOROETHYLENE (TCE)	7.2E-04		4	3
AMW-52A	S	7/1/2007	TRICHLOROETHYLENE (TCE)	2.5E-04		4	0
AMW-52A	S	7/1/2008	TRICHLOROETHYLENE (TCE)	1.4E-04		4	2
AMW-52A	S	7/1/2009	TRICHLOROETHYLENE (TCE)	1.3E-04		3	2
AMW-52A	S	7/1/2010	TRICHLOROETHYLENE (TCE)	1.6E-04	ND	1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-53A  
**Well Type:** S  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

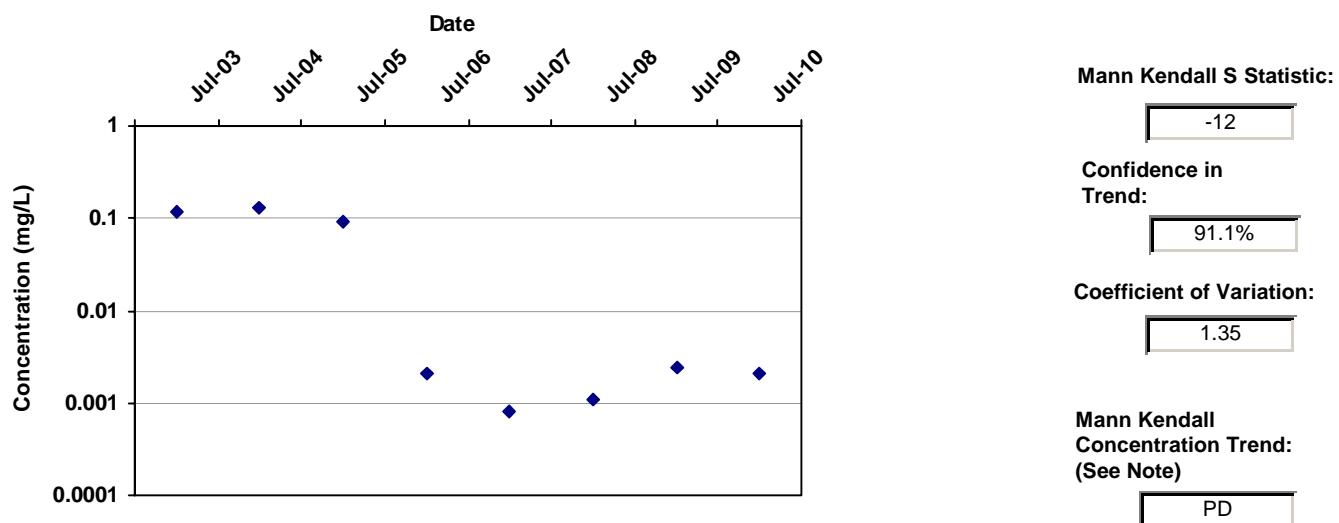
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-53A	S	7/1/2003	TRICHLOROETHYLENE (TCE)	2.4E-01		1	1
AMW-53A	S	7/1/2004	TRICHLOROETHYLENE (TCE)	1.4E-02		3	3
AMW-53A	S	7/1/2005	TRICHLOROETHYLENE (TCE)	8.4E-02		4	4
AMW-53A	S	7/1/2006	TRICHLOROETHYLENE (TCE)	1.4E-02		4	4
AMW-53A	S	7/1/2007	TRICHLOROETHYLENE (TCE)	3.8E-03		4	4
AMW-53A	S	7/1/2008	TRICHLOROETHYLENE (TCE)	7.4E-03		4	4
AMW-53A	S	7/1/2009	TRICHLOROETHYLENE (TCE)	5.7E-03		3	3
AMW-53A	S	7/1/2010	TRICHLOROETHYLENE (TCE)	1.0E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-54A  
**Well Type:** S  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

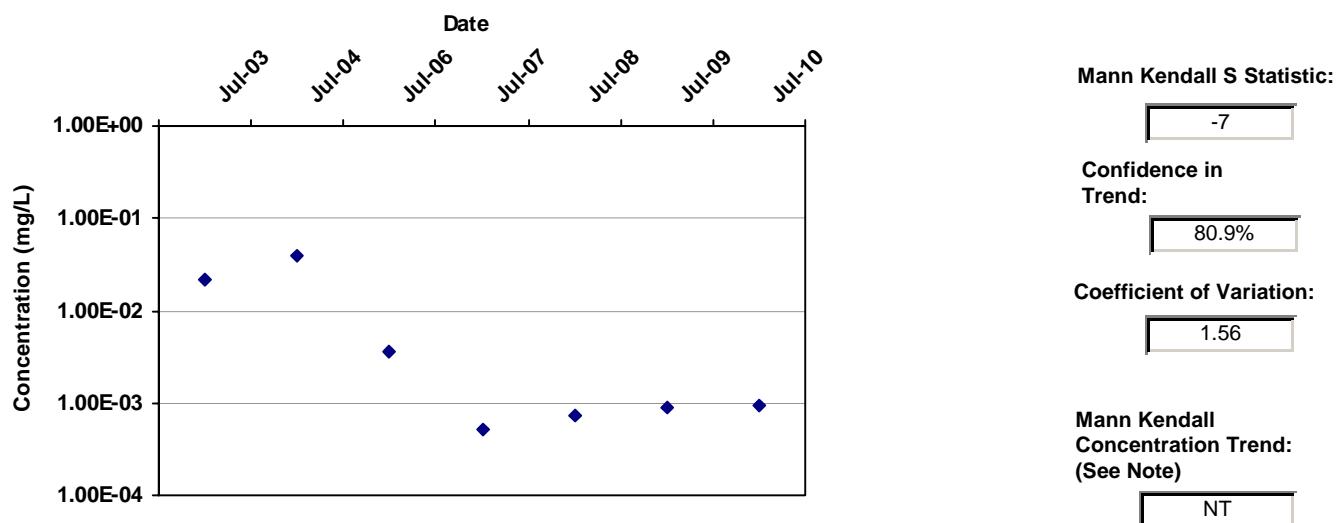
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-54A	S	7/1/2003	TRICHLOROETHYLENE (TCE)	1.2E-01		1	1
AMW-54A	S	7/1/2004	TRICHLOROETHYLENE (TCE)	1.3E-01		3	3
AMW-54A	S	7/1/2005	TRICHLOROETHYLENE (TCE)	9.0E-02		4	4
AMW-54A	S	7/1/2006	TRICHLOROETHYLENE (TCE)	2.1E-03		4	4
AMW-54A	S	7/1/2007	TRICHLOROETHYLENE (TCE)	8.1E-04		4	4
AMW-54A	S	7/1/2008	TRICHLOROETHYLENE (TCE)	1.1E-03		4	4
AMW-54A	S	7/1/2009	TRICHLOROETHYLENE (TCE)	2.4E-03		3	3
AMW-54A	S	7/1/2010	TRICHLOROETHYLENE (TCE)	2.1E-03		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-55A  
**Well Type:** S  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

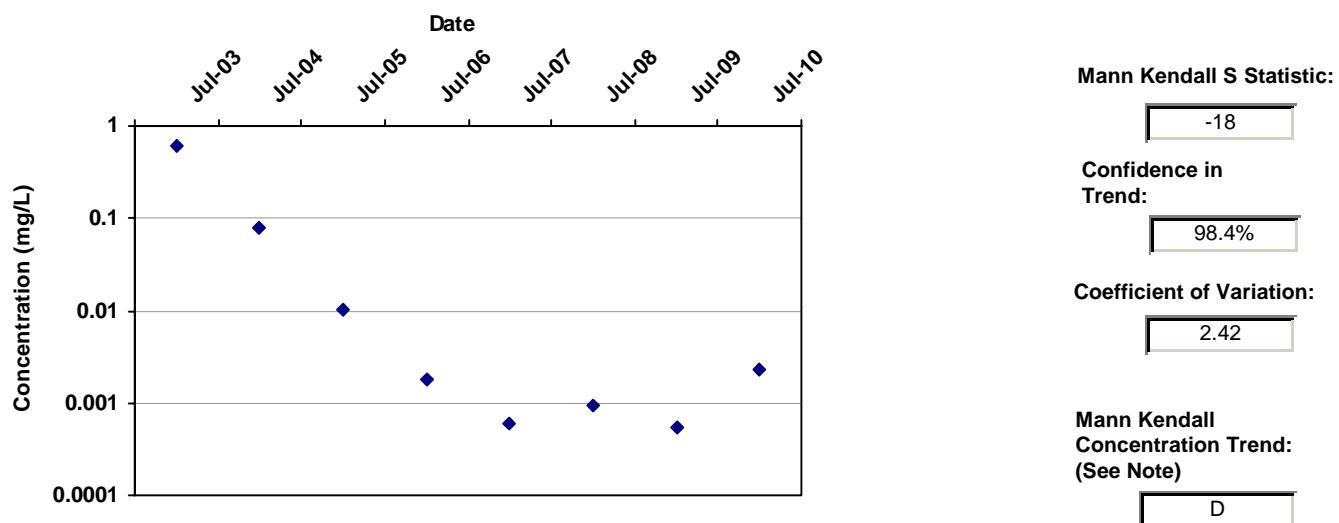
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-55A	S	7/1/2003	TRICHLOROETHYLENE (TCE)	2.2E-02		1	1
AMW-55A	S	7/1/2004	TRICHLOROETHYLENE (TCE)	3.9E-02		2	2
AMW-55A	S	7/1/2006	TRICHLOROETHYLENE (TCE)	3.5E-03		4	4
AMW-55A	S	7/1/2007	TRICHLOROETHYLENE (TCE)	5.1E-04		4	4
AMW-55A	S	7/1/2008	TRICHLOROETHYLENE (TCE)	7.2E-04		4	4
AMW-55A	S	7/1/2009	TRICHLOROETHYLENE (TCE)	9.1E-04		3	3
AMW-55A	S	7/1/2010	TRICHLOROETHYLENE (TCE)	9.5E-04		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-56A  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

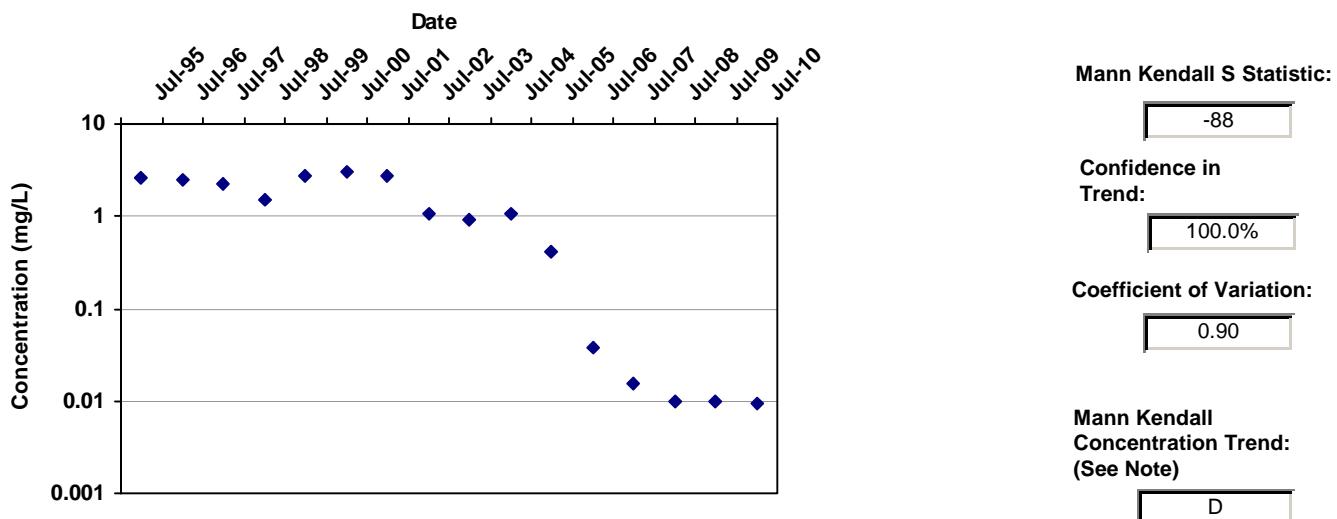
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-56A	T	7/1/2003	TRICHLOROETHYLENE (TCE)	6.1E-01		1	1
AMW-56A	T	7/1/2004	TRICHLOROETHYLENE (TCE)	7.8E-02		3	3
AMW-56A	T	7/1/2005	TRICHLOROETHYLENE (TCE)	1.0E-02		4	4
AMW-56A	T	7/1/2006	TRICHLOROETHYLENE (TCE)	1.8E-03		4	4
AMW-56A	T	7/1/2007	TRICHLOROETHYLENE (TCE)	6.1E-04		4	4
AMW-56A	T	7/1/2008	TRICHLOROETHYLENE (TCE)	9.4E-04		4	4
AMW-56A	T	7/1/2009	TRICHLOROETHYLENE (TCE)	5.4E-04		3	3
AMW-56A	T	7/1/2010	TRICHLOROETHYLENE (TCE)	2.3E-03		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-1A  
**Well Type:** S  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-1A	S	7/1/1995	TRICHLOROETHYLENE (TCE)	2.6E+00		2	2
MW-1A	S	7/1/1996	TRICHLOROETHYLENE (TCE)	2.5E+00		2	2
MW-1A	S	7/1/1997	TRICHLOROETHYLENE (TCE)	2.3E+00		2	2
MW-1A	S	7/1/1998	TRICHLOROETHYLENE (TCE)	1.5E+00		2	2
MW-1A	S	7/1/1999	TRICHLOROETHYLENE (TCE)	2.7E+00		2	2
MW-1A	S	7/1/2000	TRICHLOROETHYLENE (TCE)	3.1E+00		2	2
MW-1A	S	7/1/2001	TRICHLOROETHYLENE (TCE)	2.7E+00		2	2
MW-1A	S	7/1/2002	TRICHLOROETHYLENE (TCE)	1.1E+00		2	2
MW-1A	S	7/1/2003	TRICHLOROETHYLENE (TCE)	9.0E-01		2	2
MW-1A	S	7/1/2004	TRICHLOROETHYLENE (TCE)	1.1E+00		3	3
MW-1A	S	7/1/2005	TRICHLOROETHYLENE (TCE)	4.2E-01		4	4
MW-1A	S	7/1/2006	TRICHLOROETHYLENE (TCE)	3.8E-02		4	4
MW-1A	S	7/1/2007	TRICHLOROETHYLENE (TCE)	1.5E-02		4	4
MW-1A	S	7/1/2008	TRICHLOROETHYLENE (TCE)	9.7E-03		4	4
MW-1A	S	7/1/2009	TRICHLOROETHYLENE (TCE)	9.8E-03		3	3
MW-1A	S	7/1/2010	TRICHLOROETHYLENE (TCE)	9.3E-03		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

## **PROXIMAL WELLS**

# MAROS Mann-Kendall Statistics Summary

Well: AMW-58

Well Type: T

COC: TRICHLOROETHYLENE (TCE)

Time Period: 1/19/1995 to 10/20/2010

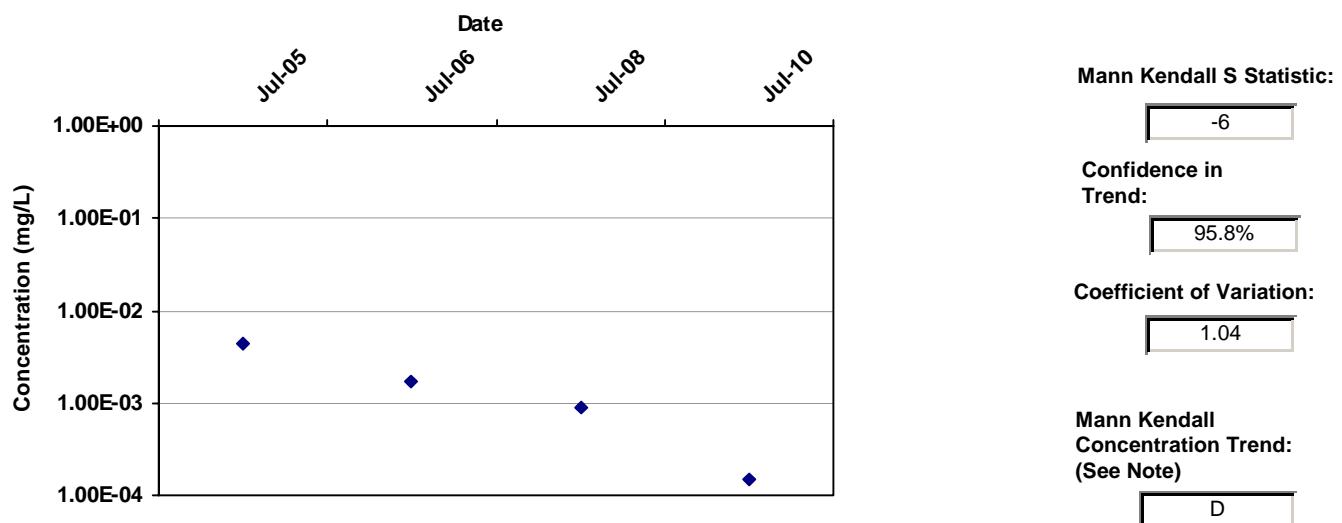
Consolidation Period: Yearly

Consolidation Type: Geometric Mean

Duplicate Consolidation: Maximum

ND Values: 1/2 Detection Limit

J Flag Values : Actual Value



## Data Table:

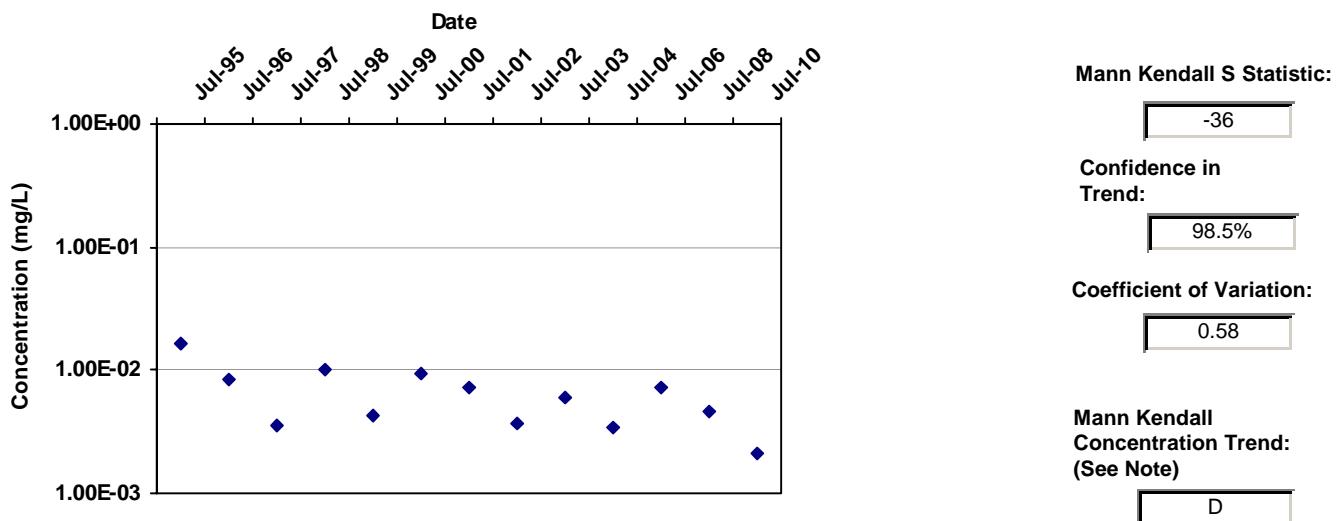
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-58	T	7/1/2005	TRICHLOROETHYLENE (TCE)	4.4E-03		3	3
AMW-58	T	7/1/2006	TRICHLOROETHYLENE (TCE)	1.7E-03		2	2
AMW-58	T	7/1/2008	TRICHLOROETHYLENE (TCE)	8.9E-04		1	1
AMW-58	T	7/1/2010	TRICHLOROETHYLENE (TCE)	1.5E-04		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-2A  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

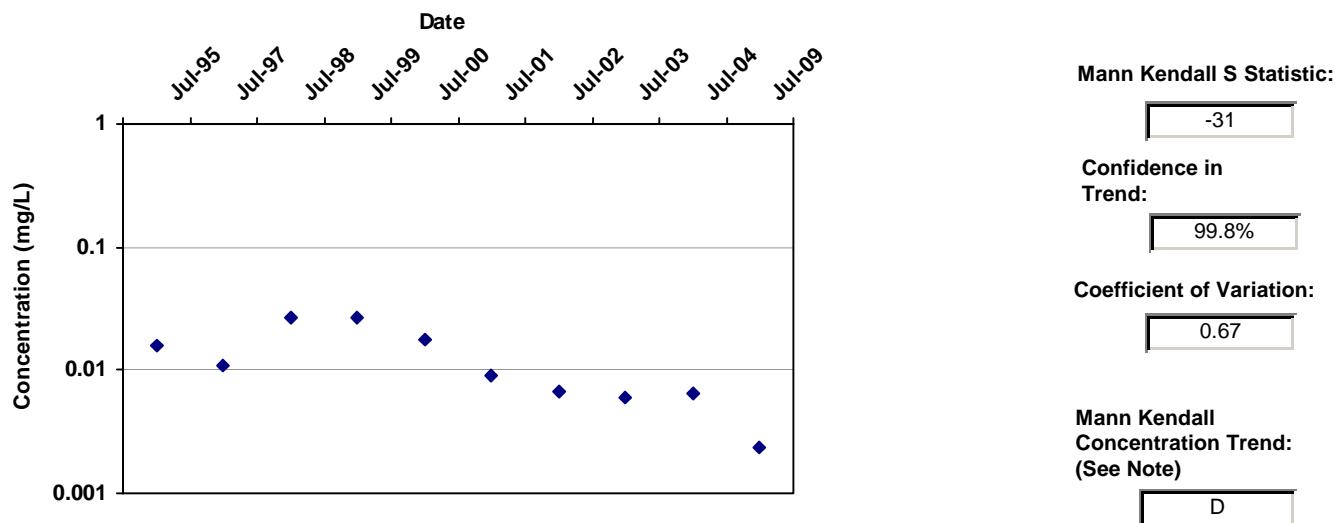
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-2A	T	7/1/1995	TRICHLOROETHYLENE (TCE)	1.6E-02		2	2
MW-2A	T	7/1/1996	TRICHLOROETHYLENE (TCE)	8.4E-03		2	2
MW-2A	T	7/1/1997	TRICHLOROETHYLENE (TCE)	3.5E-03		2	2
MW-2A	T	7/1/1998	TRICHLOROETHYLENE (TCE)	1.0E-02		2	2
MW-2A	T	7/1/1999	TRICHLOROETHYLENE (TCE)	4.3E-03		2	2
MW-2A	T	7/1/2000	TRICHLOROETHYLENE (TCE)	9.4E-03		2	2
MW-2A	T	7/1/2001	TRICHLOROETHYLENE (TCE)	7.3E-03		2	2
MW-2A	T	7/1/2002	TRICHLOROETHYLENE (TCE)	3.7E-03		2	2
MW-2A	T	7/1/2003	TRICHLOROETHYLENE (TCE)	5.9E-03		2	2
MW-2A	T	7/1/2004	TRICHLOROETHYLENE (TCE)	3.4E-03		1	1
MW-2A	T	7/1/2006	TRICHLOROETHYLENE (TCE)	7.3E-03		1	1
MW-2A	T	7/1/2008	TRICHLOROETHYLENE (TCE)	4.7E-03		1	1
MW-2A	T	7/1/2010	TRICHLOROETHYLENE (TCE)	2.1E-03		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-2B  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

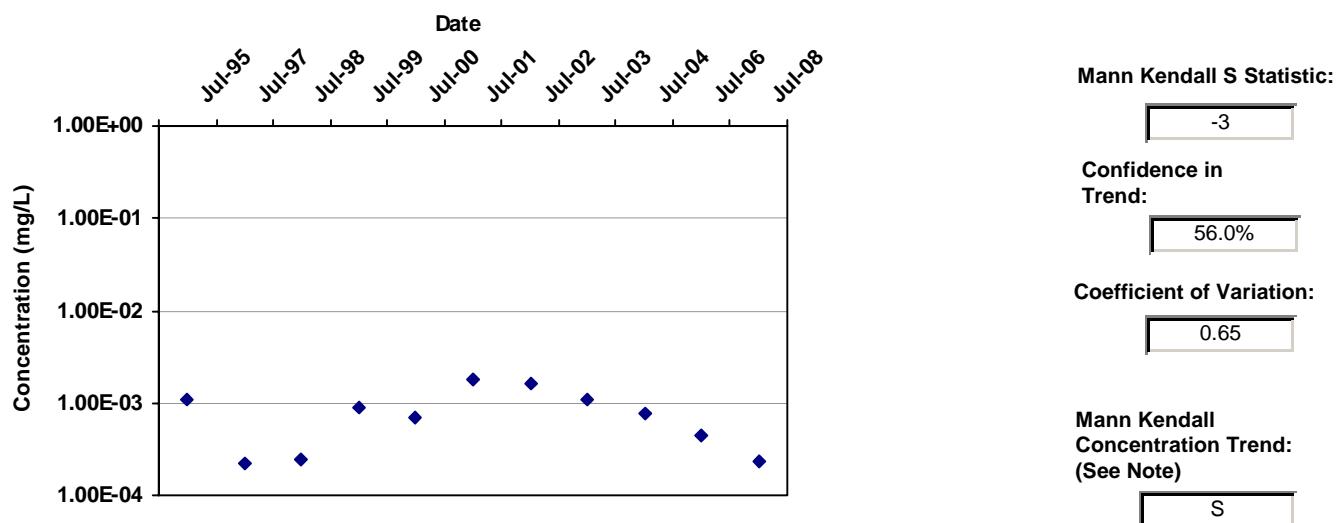
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-2B	T	7/1/1995	TRICHLOROETHYLENE (TCE)	1.6E-02		2	2
MW-2B	T	7/1/1997	TRICHLOROETHYLENE (TCE)	1.1E-02		1	1
MW-2B	T	7/1/1998	TRICHLOROETHYLENE (TCE)	2.7E-02		2	2
MW-2B	T	7/1/1999	TRICHLOROETHYLENE (TCE)	2.6E-02		2	2
MW-2B	T	7/1/2000	TRICHLOROETHYLENE (TCE)	1.8E-02		2	2
MW-2B	T	7/1/2001	TRICHLOROETHYLENE (TCE)	9.0E-03		1	1
MW-2B	T	7/1/2002	TRICHLOROETHYLENE (TCE)	6.8E-03		1	1
MW-2B	T	7/1/2003	TRICHLOROETHYLENE (TCE)	5.9E-03		1	1
MW-2B	T	7/1/2004	TRICHLOROETHYLENE (TCE)	6.5E-03		1	1
MW-2B	T	7/1/2009	TRICHLOROETHYLENE (TCE)	2.4E-03		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-3A  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

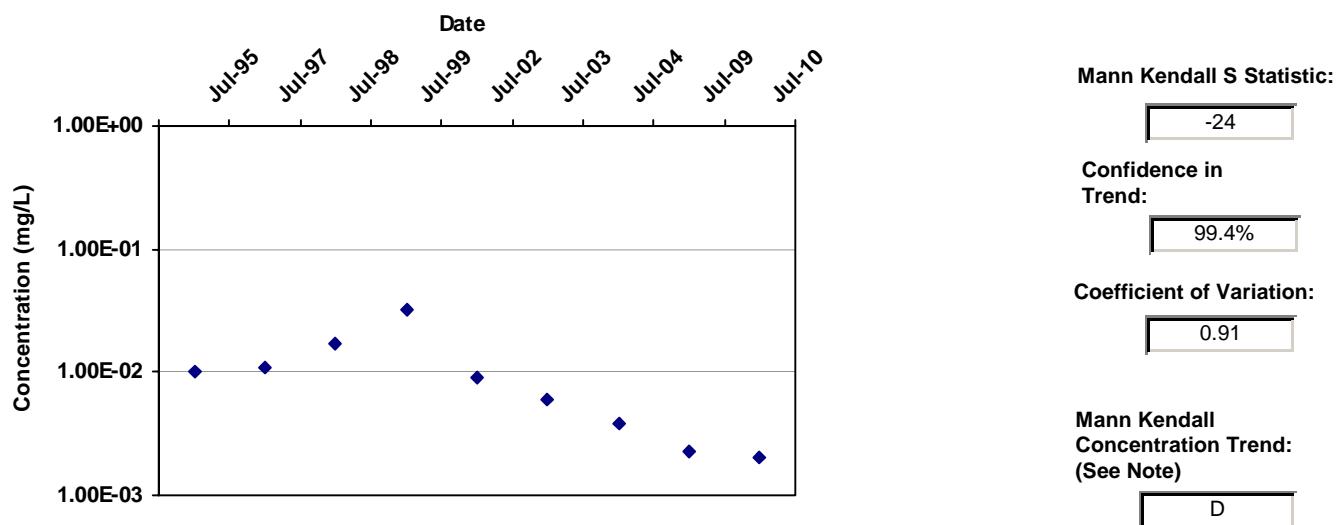
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-3A	T	7/1/1995	TRICHLOROETHYLENE (TCE)	1.1E-03		2	1
MW-3A	T	7/1/1997	TRICHLOROETHYLENE (TCE)	2.2E-04		2	1
MW-3A	T	7/1/1998	TRICHLOROETHYLENE (TCE)	2.5E-04		2	0
MW-3A	T	7/1/1999	TRICHLOROETHYLENE (TCE)	9.0E-04		1	1
MW-3A	T	7/1/2000	TRICHLOROETHYLENE (TCE)	6.9E-04		2	2
MW-3A	T	7/1/2001	TRICHLOROETHYLENE (TCE)	1.8E-03		2	2
MW-3A	T	7/1/2002	TRICHLOROETHYLENE (TCE)	1.6E-03		2	2
MW-3A	T	7/1/2003	TRICHLOROETHYLENE (TCE)	1.1E-03		2	2
MW-3A	T	7/1/2004	TRICHLOROETHYLENE (TCE)	7.7E-04		2	2
MW-3A	T	7/1/2006	TRICHLOROETHYLENE (TCE)	4.4E-04		1	1
MW-3A	T	7/1/2008	TRICHLOROETHYLENE (TCE)	2.3E-04		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-3B  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

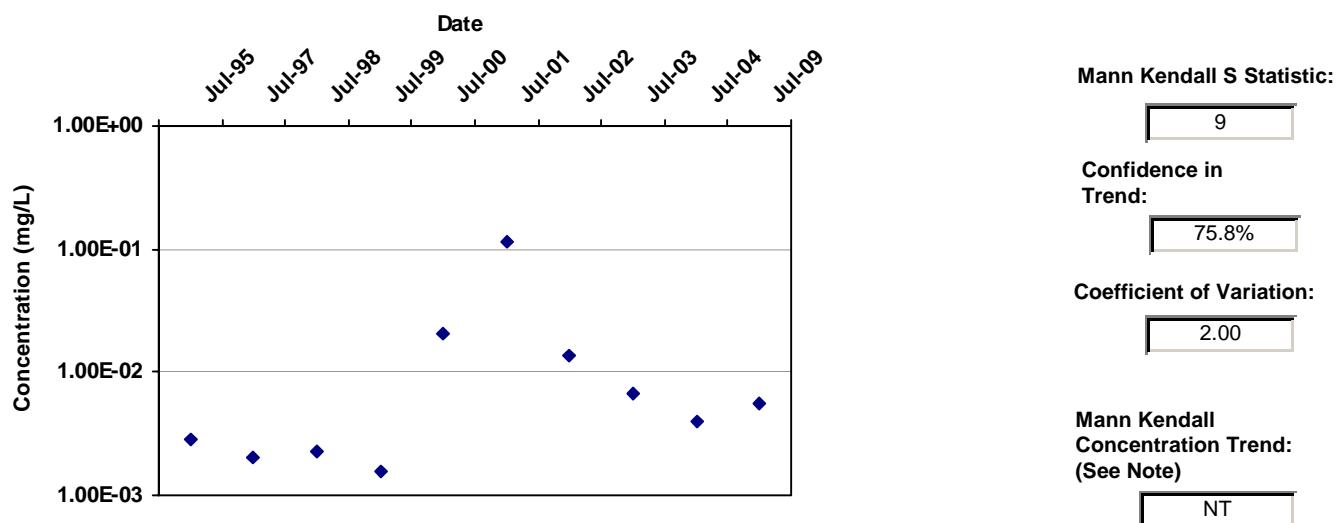
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-3B	T	7/1/1995	TRICHLOROETHYLENE (TCE)	1.0E-02		2	2
MW-3B	T	7/1/1997	TRICHLOROETHYLENE (TCE)	1.1E-02		1	1
MW-3B	T	7/1/1998	TRICHLOROETHYLENE (TCE)	1.7E-02		2	2
MW-3B	T	7/1/1999	TRICHLOROETHYLENE (TCE)	3.2E-02		2	2
MW-3B	T	7/1/2002	TRICHLOROETHYLENE (TCE)	9.2E-03		1	1
MW-3B	T	7/1/2003	TRICHLOROETHYLENE (TCE)	5.9E-03		1	1
MW-3B	T	7/1/2004	TRICHLOROETHYLENE (TCE)	3.9E-03		1	1
MW-3B	T	7/1/2009	TRICHLOROETHYLENE (TCE)	2.3E-03		1	1
MW-3B	T	7/1/2010	TRICHLOROETHYLENE (TCE)	2.0E-03		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-4A  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

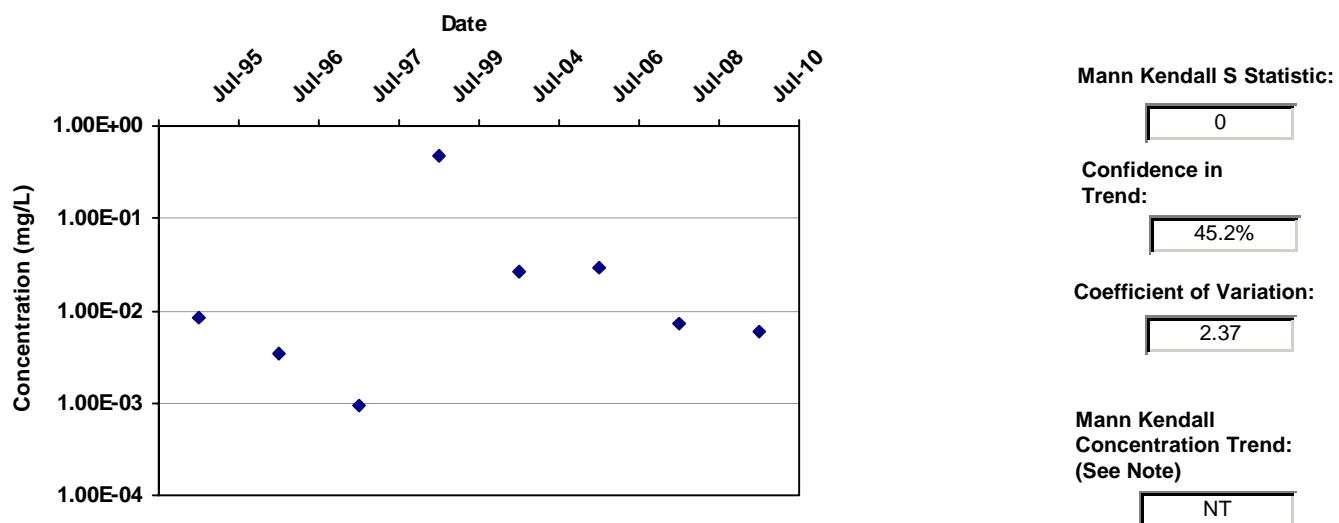
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-4A	T	7/1/1995	TRICHLOROETHYLENE (TCE)	2.9E-03		2	2
MW-4A	T	7/1/1997	TRICHLOROETHYLENE (TCE)	2.0E-03		2	2
MW-4A	T	7/1/1998	TRICHLOROETHYLENE (TCE)	2.2E-03		2	2
MW-4A	T	7/1/1999	TRICHLOROETHYLENE (TCE)	1.5E-03		2	2
MW-4A	T	7/1/2000	TRICHLOROETHYLENE (TCE)	2.1E-02		2	2
MW-4A	T	7/1/2001	TRICHLOROETHYLENE (TCE)	1.2E-01		2	2
MW-4A	T	7/1/2002	TRICHLOROETHYLENE (TCE)	1.3E-02		2	2
MW-4A	T	7/1/2003	TRICHLOROETHYLENE (TCE)	6.6E-03		2	2
MW-4A	T	7/1/2004	TRICHLOROETHYLENE (TCE)	4.1E-03		2	2
MW-4A	T	7/1/2009	TRICHLOROETHYLENE (TCE)	5.5E-03		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-4B  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

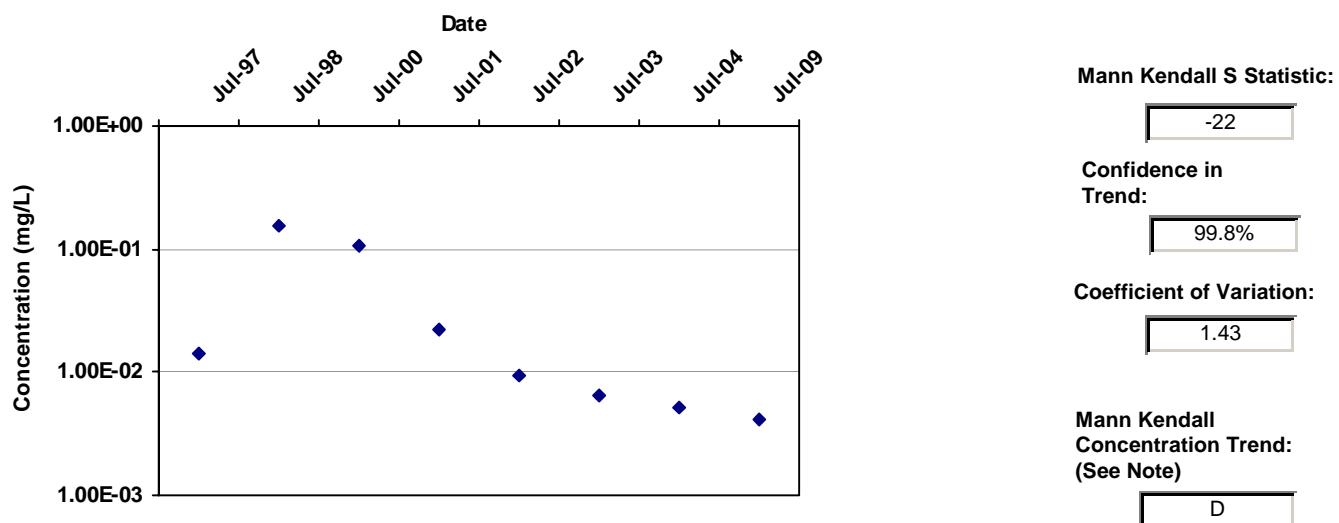
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-4B	T	7/1/1995	TRICHLOROETHYLENE (TCE)	8.2E-03		2	2
MW-4B	T	7/1/1996	TRICHLOROETHYLENE (TCE)	3.5E-03		2	2
MW-4B	T	7/1/1997	TRICHLOROETHYLENE (TCE)	9.4E-04		1	1
MW-4B	T	7/1/1999	TRICHLOROETHYLENE (TCE)	4.8E-01		2	2
MW-4B	T	7/1/2004	TRICHLOROETHYLENE (TCE)	2.6E-02		1	1
MW-4B	T	7/1/2006	TRICHLOROETHYLENE (TCE)	2.9E-02		1	1
MW-4B	T	7/1/2008	TRICHLOROETHYLENE (TCE)	7.2E-03		1	1
MW-4B	T	7/1/2010	TRICHLOROETHYLENE (TCE)	5.9E-03		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-4BSHE  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

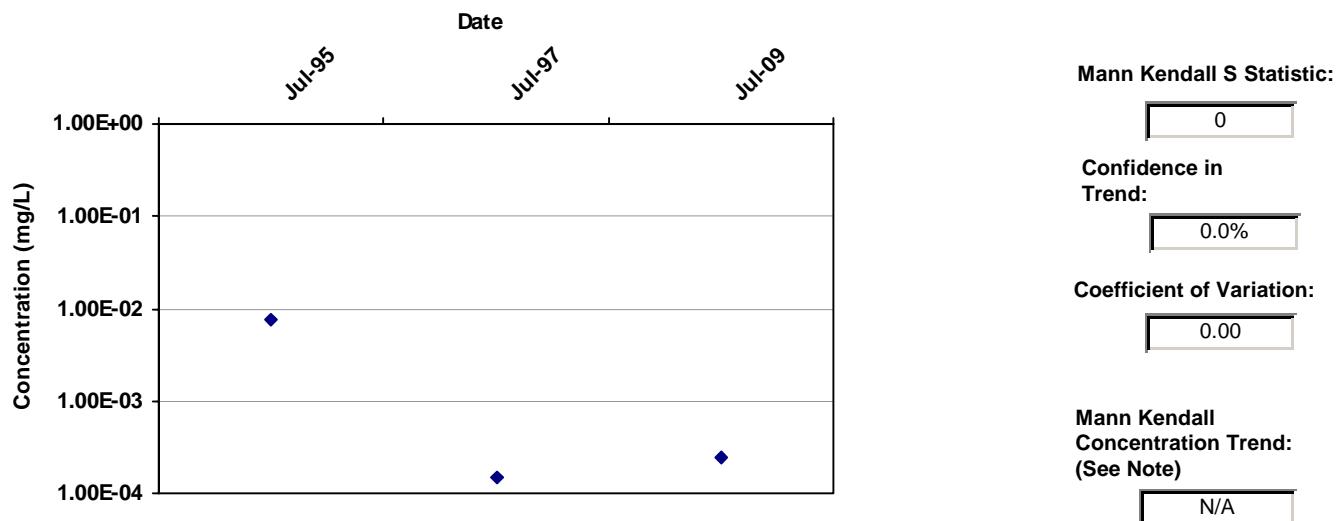
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-4BSHED	T	7/1/1997	TRICHLOROETHYLENE (TCE)	1.4E-02		2	2
MW-4BSHED	T	7/1/1998	TRICHLOROETHYLENE (TCE)	1.6E-01		2	2
MW-4BSHED	T	7/1/2000	TRICHLOROETHYLENE (TCE)	1.1E-01		2	2
MW-4BSHED	T	7/1/2001	TRICHLOROETHYLENE (TCE)	2.2E-02		2	2
MW-4BSHED	T	7/1/2002	TRICHLOROETHYLENE (TCE)	9.5E-03		2	2
MW-4BSHED	T	7/1/2003	TRICHLOROETHYLENE (TCE)	6.5E-03		2	2
MW-4BSHED	T	7/1/2004	TRICHLOROETHYLENE (TCE)	5.2E-03		1	1
MW-4BSHED	T	7/1/2009	TRICHLOROETHYLENE (TCE)	4.1E-03		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-6A  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

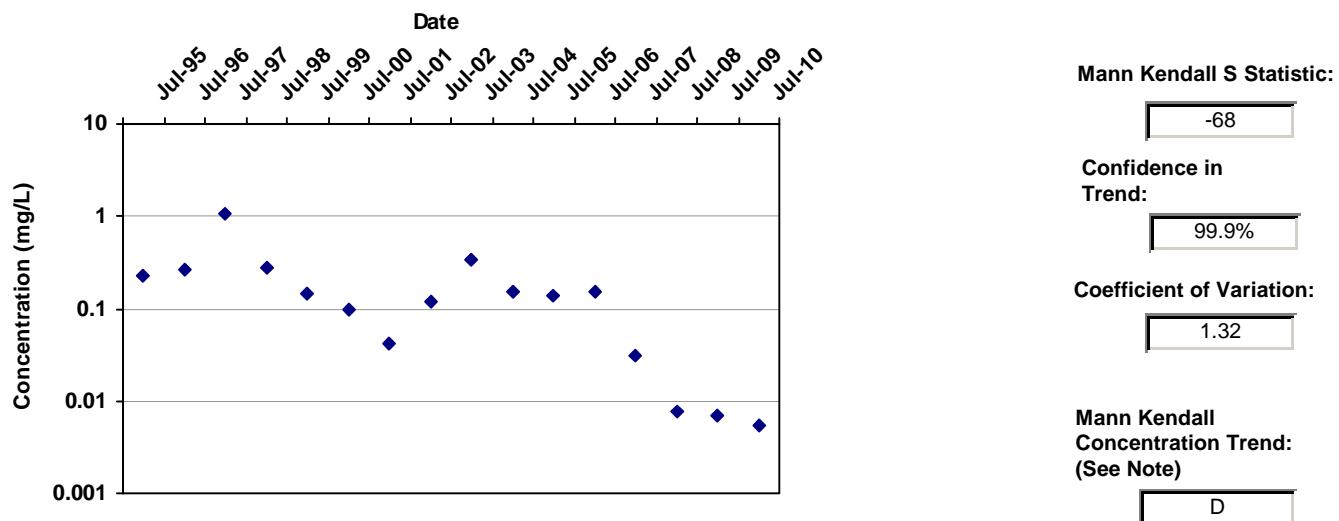
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-6A	T	7/1/1995	TRICHLOROETHYLENE (TCE)	7.6E-03		2	2
MW-6A	T	7/1/1997	TRICHLOROETHYLENE (TCE)	1.5E-04	ND	1	0
MW-6A	T	7/1/2009	TRICHLOROETHYLENE (TCE)	2.5E-04	ND	1	0

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-6B  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

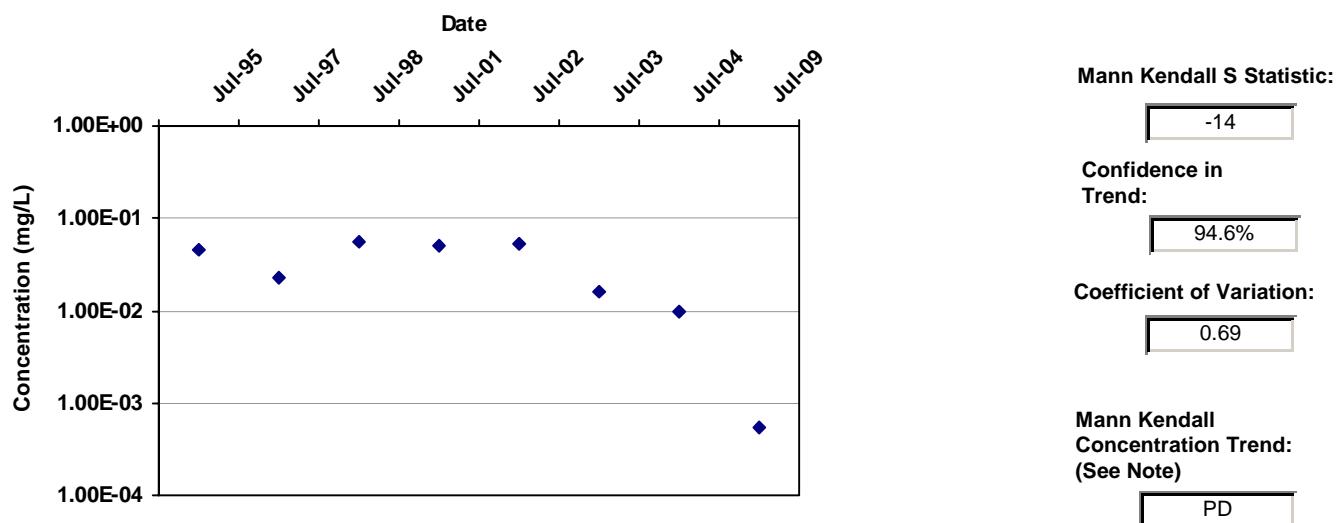
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-6B	T	7/1/1995	TRICHLOROETHYLENE (TCE)	2.3E-01		11	11
MW-6B	T	7/1/1996	TRICHLOROETHYLENE (TCE)	2.6E-01		2	2
MW-6B	T	7/1/1997	TRICHLOROETHYLENE (TCE)	1.1E+00		2	2
MW-6B	T	7/1/1998	TRICHLOROETHYLENE (TCE)	2.8E-01		2	2
MW-6B	T	7/1/1999	TRICHLOROETHYLENE (TCE)	1.4E-01		2	2
MW-6B	T	7/1/2000	TRICHLOROETHYLENE (TCE)	1.0E-01		2	2
MW-6B	T	7/1/2001	TRICHLOROETHYLENE (TCE)	4.2E-02		2	2
MW-6B	T	7/1/2002	TRICHLOROETHYLENE (TCE)	1.2E-01		3	3
MW-6B	T	7/1/2003	TRICHLOROETHYLENE (TCE)	3.4E-01		3	3
MW-6B	T	7/1/2004	TRICHLOROETHYLENE (TCE)	1.5E-01		2	2
MW-6B	T	7/1/2005	TRICHLOROETHYLENE (TCE)	1.4E-01		1	1
MW-6B	T	7/1/2006	TRICHLOROETHYLENE (TCE)	1.5E-01		1	1
MW-6B	T	7/1/2007	TRICHLOROETHYLENE (TCE)	3.2E-02		2	2
MW-6B	T	7/1/2008	TRICHLOROETHYLENE (TCE)	7.5E-03		2	2
MW-6B	T	7/1/2009	TRICHLOROETHYLENE (TCE)	6.8E-03		2	2
MW-6B	T	7/1/2010	TRICHLOROETHYLENE (TCE)	5.4E-03		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-6C  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

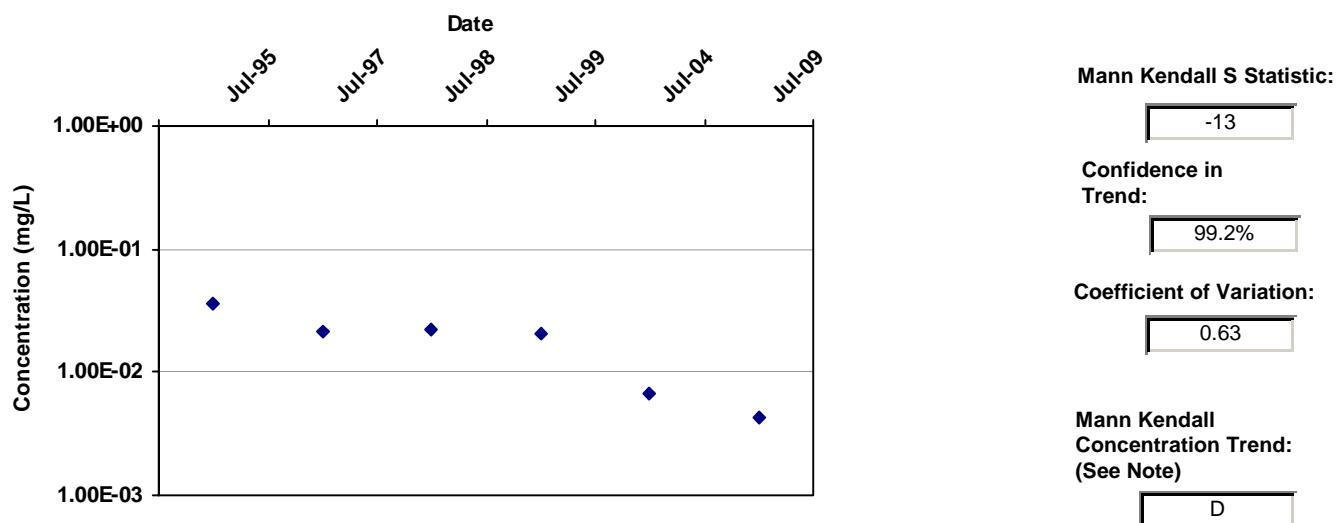
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-6C	T	7/1/1995	TRICHLOROETHYLENE (TCE)	4.5E-02		2	2
MW-6C	T	7/1/1997	TRICHLOROETHYLENE (TCE)	2.3E-02		1	1
MW-6C	T	7/1/1998	TRICHLOROETHYLENE (TCE)	5.7E-02		1	1
MW-6C	T	7/1/2001	TRICHLOROETHYLENE (TCE)	5.0E-02		1	1
MW-6C	T	7/1/2002	TRICHLOROETHYLENE (TCE)	5.2E-02		1	1
MW-6C	T	7/1/2003	TRICHLOROETHYLENE (TCE)	1.6E-02		1	1
MW-6C	T	7/1/2004	TRICHLOROETHYLENE (TCE)	9.7E-03		1	1
MW-6C	T	7/1/2009	TRICHLOROETHYLENE (TCE)	5.4E-04		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-6D  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

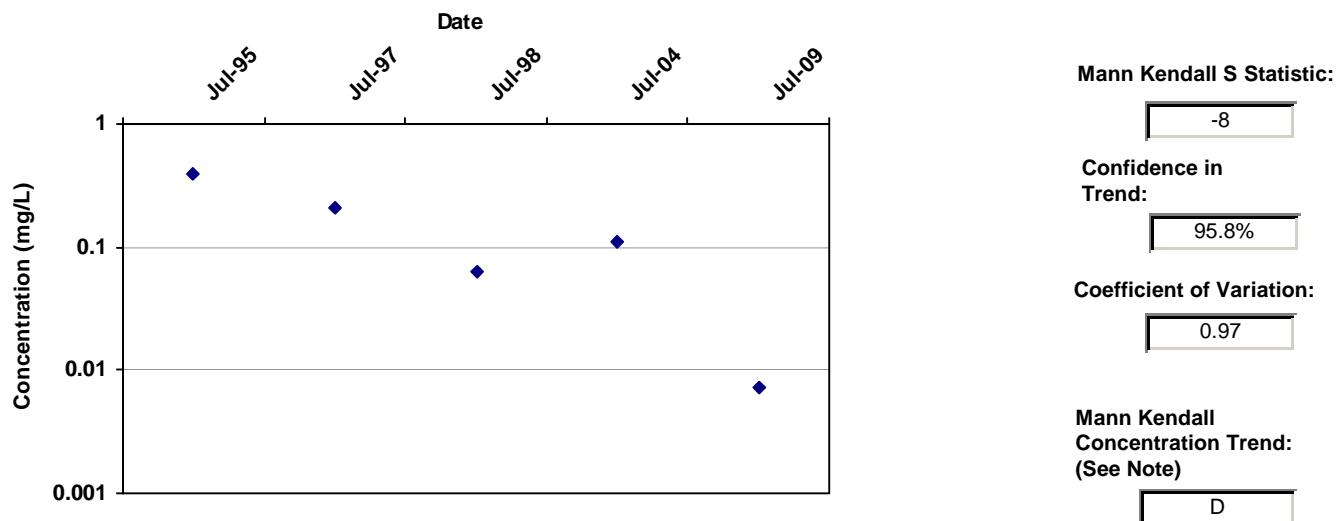
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-6D	T	7/1/1995	TRICHLOROETHYLENE (TCE)	3.7E-02		2	2
MW-6D	T	7/1/1997	TRICHLOROETHYLENE (TCE)	2.1E-02		1	1
MW-6D	T	7/1/1998	TRICHLOROETHYLENE (TCE)	2.2E-02		1	1
MW-6D	T	7/1/1999	TRICHLOROETHYLENE (TCE)	2.1E-02		2	2
MW-6D	T	7/1/2004	TRICHLOROETHYLENE (TCE)	6.7E-03		1	1
MW-6D	T	7/1/2009	TRICHLOROETHYLENE (TCE)	4.3E-03		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-7B  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

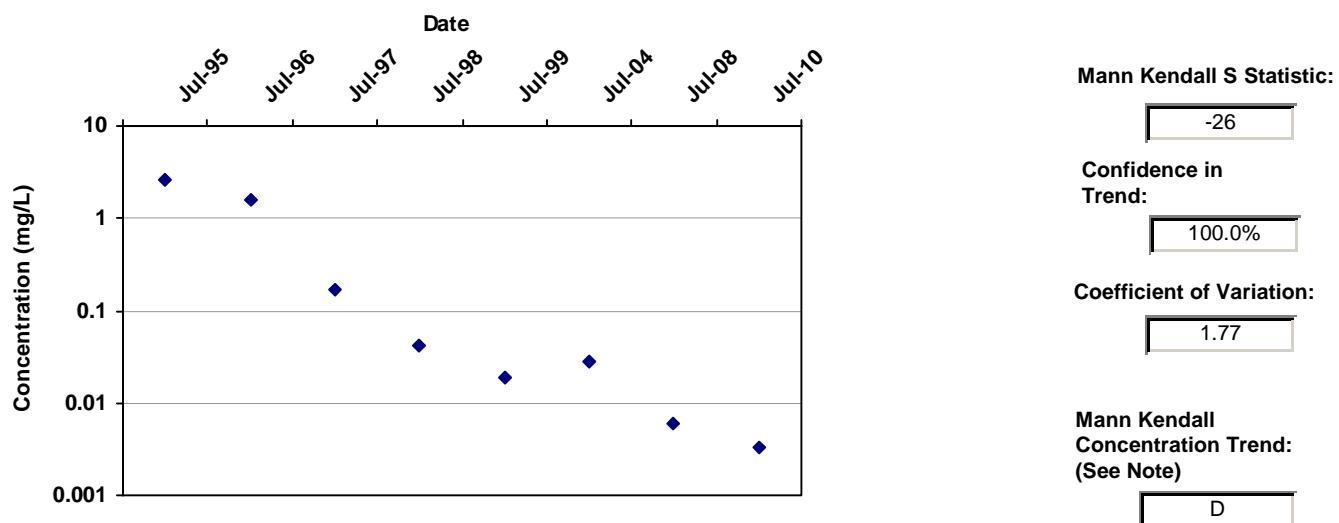
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-7B	T	7/1/1995	TRICHLOROETHYLENE (TCE)	3.9E-01		2	2
MW-7B	T	7/1/1997	TRICHLOROETHYLENE (TCE)	2.1E-01		1	1
MW-7B	T	7/1/1998	TRICHLOROETHYLENE (TCE)	6.2E-02		1	1
MW-7B	T	7/1/2004	TRICHLOROETHYLENE (TCE)	1.1E-01		1	1
MW-7B	T	7/1/2009	TRICHLOROETHYLENE (TCE)	7.3E-03		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-8B  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

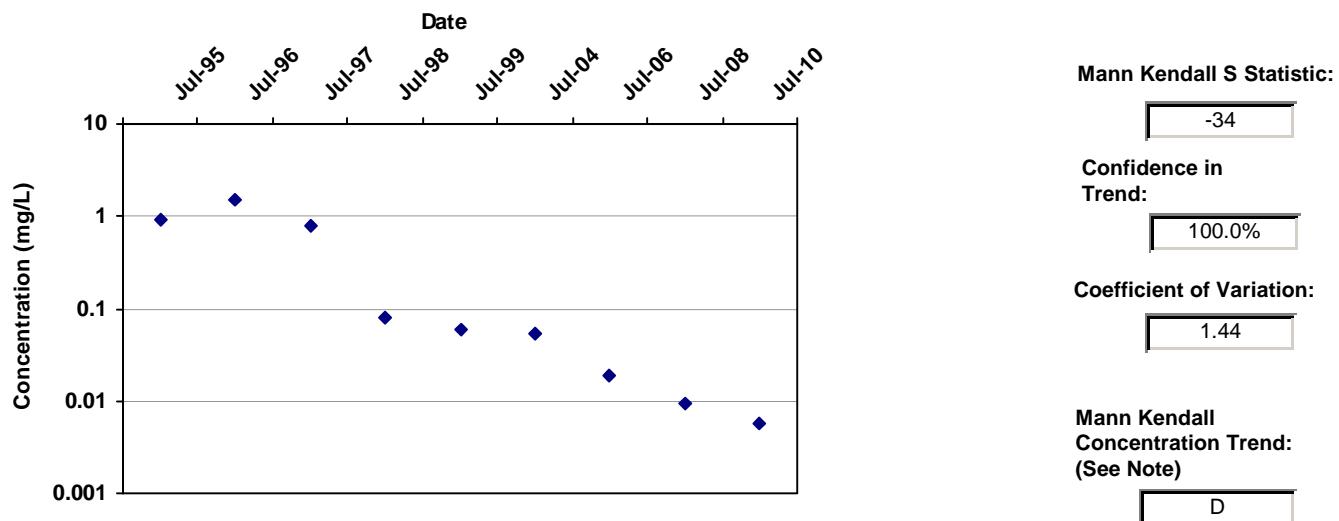
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-8B	T	7/1/1995	TRICHLOROETHYLENE (TCE)	2.6E+00		2	2
MW-8B	T	7/1/1996	TRICHLOROETHYLENE (TCE)	1.6E+00		2	2
MW-8B	T	7/1/1997	TRICHLOROETHYLENE (TCE)	1.7E-01		2	2
MW-8B	T	7/1/1998	TRICHLOROETHYLENE (TCE)	4.1E-02		1	1
MW-8B	T	7/1/1999	TRICHLOROETHYLENE (TCE)	1.9E-02		2	2
MW-8B	T	7/1/2004	TRICHLOROETHYLENE (TCE)	2.8E-02		1	1
MW-8B	T	7/1/2008	TRICHLOROETHYLENE (TCE)	6.0E-03		1	1
MW-8B	T	7/1/2010	TRICHLOROETHYLENE (TCE)	3.3E-03		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-9B  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

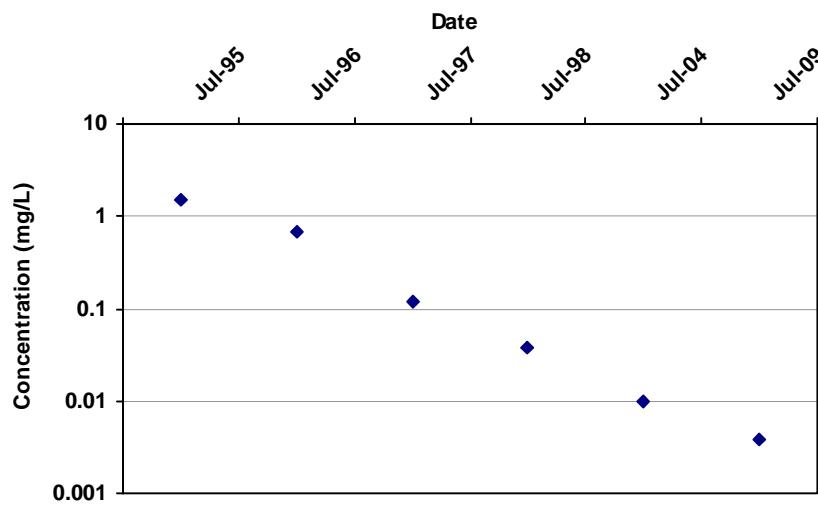
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-9B	T	7/1/1995	TRICHLOROETHYLENE (TCE)	9.4E-01		2	2
MW-9B	T	7/1/1996	TRICHLOROETHYLENE (TCE)	1.5E+00		2	2
MW-9B	T	7/1/1997	TRICHLOROETHYLENE (TCE)	7.8E-01		2	2
MW-9B	T	7/1/1998	TRICHLOROETHYLENE (TCE)	8.1E-02		2	2
MW-9B	T	7/1/1999	TRICHLOROETHYLENE (TCE)	6.0E-02		2	2
MW-9B	T	7/1/2004	TRICHLOROETHYLENE (TCE)	5.5E-02		1	1
MW-9B	T	7/1/2006	TRICHLOROETHYLENE (TCE)	1.9E-02		1	1
MW-9B	T	7/1/2008	TRICHLOROETHYLENE (TCE)	9.3E-03		1	1
MW-9B	T	7/1/2010	TRICHLOROETHYLENE (TCE)	5.7E-03		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-9C  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



**Mann Kendall S Statistic:** -15  
**Confidence in Trend:** 99.9%  
**Coefficient of Variation:** 1.53  
**Mann Kendall Concentration Trend: (See Note)** D

## Data Table:

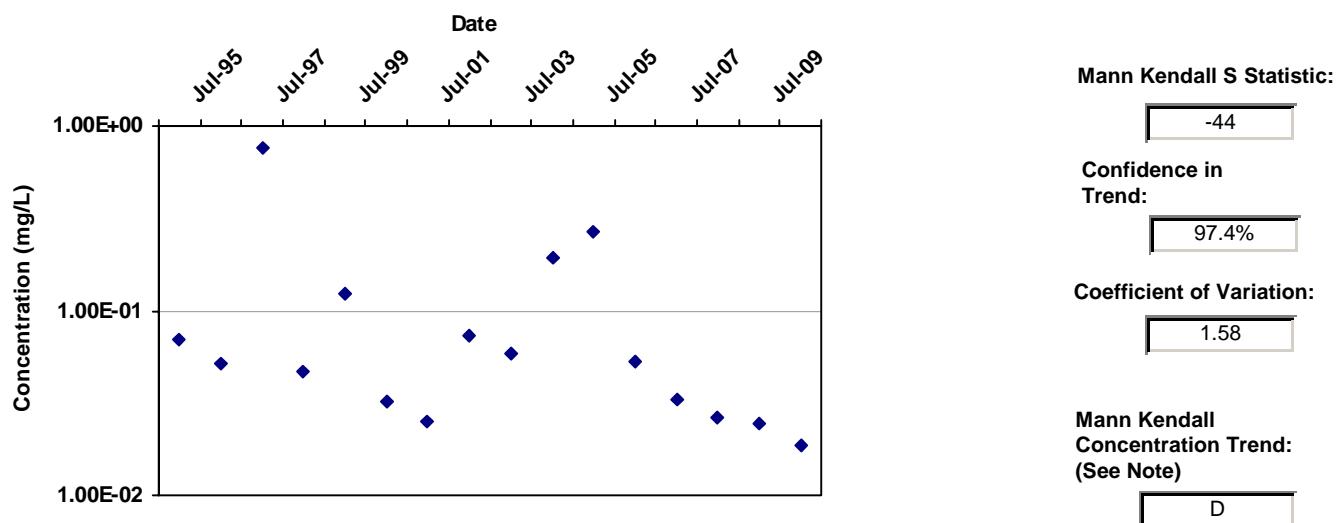
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-9C	T	7/1/1995	TRICHLOROETHYLENE (TCE)	1.5E+00		2	2
MW-9C	T	7/1/1996	TRICHLOROETHYLENE (TCE)	6.9E-01		2	2
MW-9C	T	7/1/1997	TRICHLOROETHYLENE (TCE)	1.2E-01		2	2
MW-9C	T	7/1/1998	TRICHLOROETHYLENE (TCE)	3.7E-02		1	1
MW-9C	T	7/1/2004	TRICHLOROETHYLENE (TCE)	1.0E-02		1	1
MW-9C	T	7/1/2009	TRICHLOROETHYLENE (TCE)	3.8E-03		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-10B  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-10B	T	7/1/1995	TRICHLOROETHYLENE (TCE)	7.0E-02		11	11
MW-10B	T	7/1/1996	TRICHLOROETHYLENE (TCE)	5.2E-02		2	2
MW-10B	T	7/1/1997	TRICHLOROETHYLENE (TCE)	7.5E-01		2	2
MW-10B	T	7/1/1998	TRICHLOROETHYLENE (TCE)	4.7E-02		2	2
MW-10B	T	7/1/1999	TRICHLOROETHYLENE (TCE)	1.2E-01		2	2
MW-10B	T	7/1/2000	TRICHLOROETHYLENE (TCE)	3.2E-02		2	2
MW-10B	T	7/1/2001	TRICHLOROETHYLENE (TCE)	2.5E-02		2	2
MW-10B	T	7/1/2002	TRICHLOROETHYLENE (TCE)	7.3E-02		3	3
MW-10B	T	7/1/2003	TRICHLOROETHYLENE (TCE)	5.8E-02		3	3
MW-10B	T	7/1/2004	TRICHLOROETHYLENE (TCE)	1.9E-01		2	2
MW-10B	T	7/1/2005	TRICHLOROETHYLENE (TCE)	2.7E-01		1	1
MW-10B	T	7/1/2006	TRICHLOROETHYLENE (TCE)	5.3E-02		1	1
MW-10B	T	7/1/2007	TRICHLOROETHYLENE (TCE)	3.3E-02		2	2
MW-10B	T	7/1/2008	TRICHLOROETHYLENE (TCE)	2.6E-02		2	2
MW-10B	T	7/1/2009	TRICHLOROETHYLENE (TCE)	2.4E-02		2	2
MW-10B	T	7/1/2010	TRICHLOROETHYLENE (TCE)	1.8E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-10C

**Well Type:** T

**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010

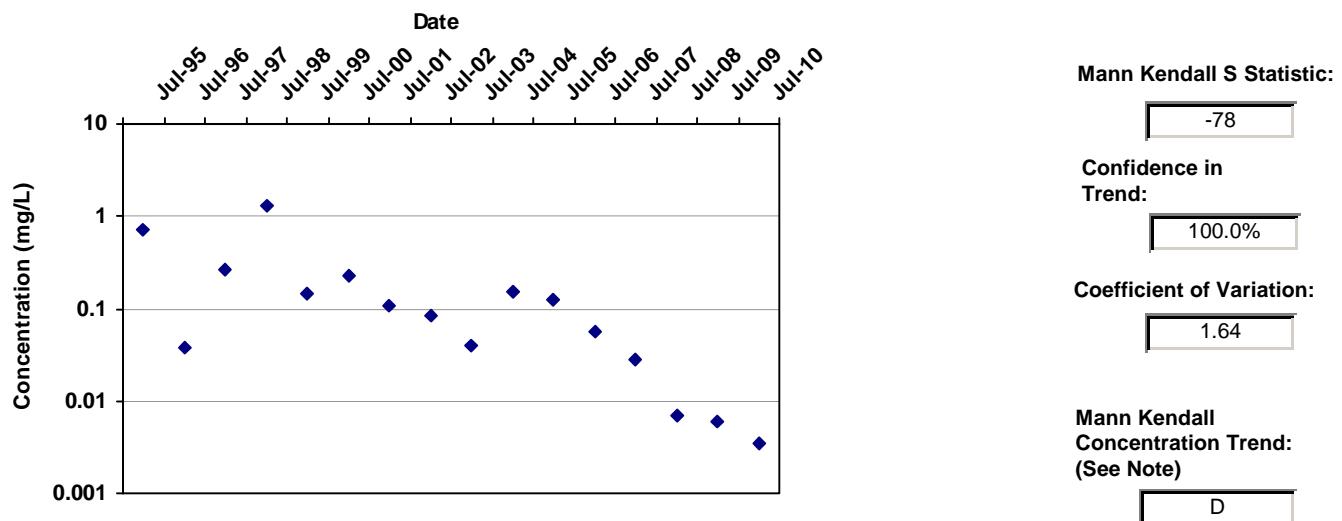
**Consolidation Period:** Yearly

**Consolidation Type:** Geometric Mean

**Duplicate Consolidation:** Maximum

**ND Values:** 1/2 Detection Limit

**J Flag Values :** Actual Value



## Data Table:

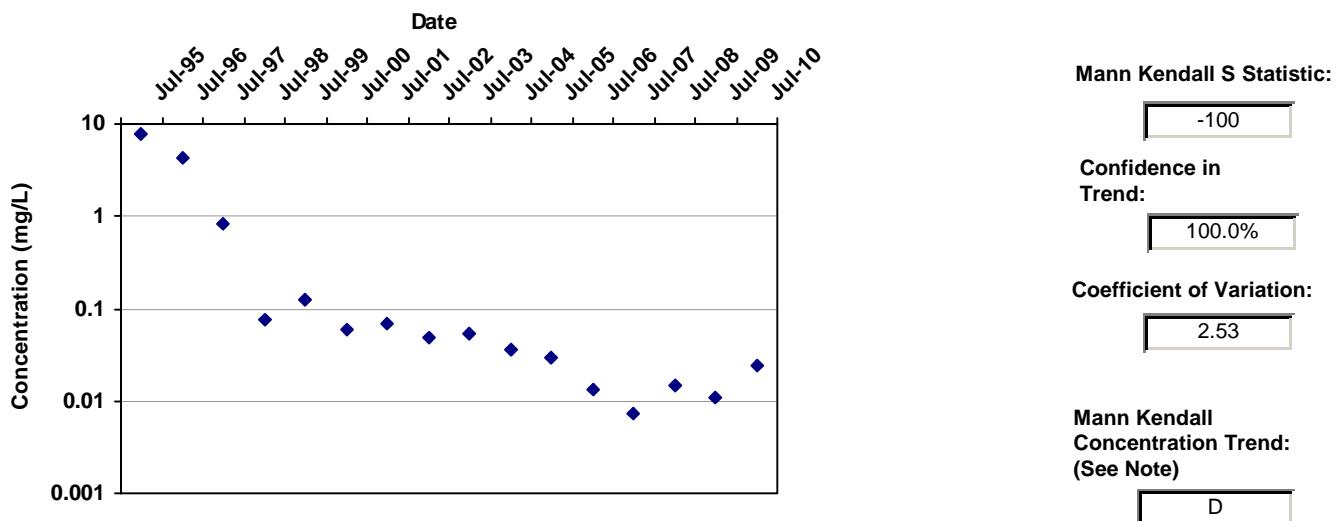
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-10C	T	7/1/1995	TRICHLOROETHYLENE (TCE)	7.0E-01		11	11
MW-10C	T	7/1/1996	TRICHLOROETHYLENE (TCE)	3.7E-02		2	2
MW-10C	T	7/1/1997	TRICHLOROETHYLENE (TCE)	2.6E-01		2	2
MW-10C	T	7/1/1998	TRICHLOROETHYLENE (TCE)	1.3E+00		2	2
MW-10C	T	7/1/1999	TRICHLOROETHYLENE (TCE)	1.4E-01		2	2
MW-10C	T	7/1/2000	TRICHLOROETHYLENE (TCE)	2.2E-01		2	2
MW-10C	T	7/1/2001	TRICHLOROETHYLENE (TCE)	1.1E-01		2	2
MW-10C	T	7/1/2002	TRICHLOROETHYLENE (TCE)	8.3E-02		3	3
MW-10C	T	7/1/2003	TRICHLOROETHYLENE (TCE)	4.1E-02		3	3
MW-10C	T	7/1/2004	TRICHLOROETHYLENE (TCE)	1.5E-01		2	2
MW-10C	T	7/1/2005	TRICHLOROETHYLENE (TCE)	1.2E-01		2	2
MW-10C	T	7/1/2006	TRICHLOROETHYLENE (TCE)	5.6E-02		2	2
MW-10C	T	7/1/2007	TRICHLOROETHYLENE (TCE)	2.9E-02		2	2
MW-10C	T	7/1/2008	TRICHLOROETHYLENE (TCE)	6.9E-03		2	2
MW-10C	T	7/1/2009	TRICHLOROETHYLENE (TCE)	6.0E-03		2	2
MW-10C	T	7/1/2010	TRICHLOROETHYLENE (TCE)	3.5E-03		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-12C  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

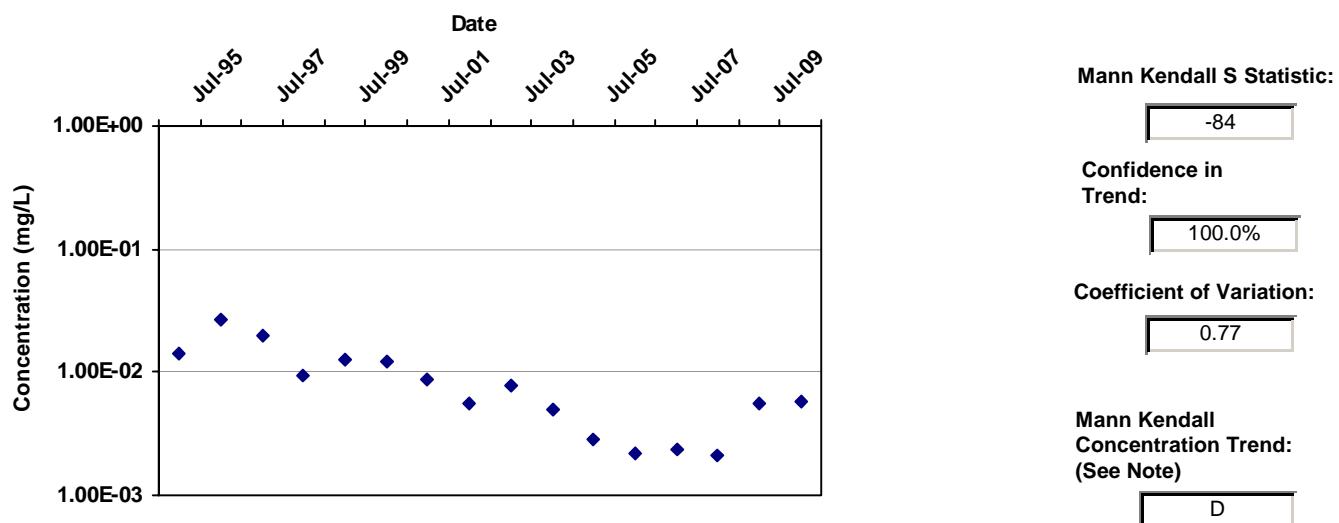
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-12C	T	7/1/1995	TRICHLOROETHYLENE (TCE)	7.7E+00		2	2
MW-12C	T	7/1/1996	TRICHLOROETHYLENE (TCE)	4.4E+00		2	2
MW-12C	T	7/1/1997	TRICHLOROETHYLENE (TCE)	8.1E-01		2	2
MW-12C	T	7/1/1998	TRICHLOROETHYLENE (TCE)	7.7E-02		2	2
MW-12C	T	7/1/1999	TRICHLOROETHYLENE (TCE)	1.2E-01		2	2
MW-12C	T	7/1/2000	TRICHLOROETHYLENE (TCE)	6.1E-02		2	2
MW-12C	T	7/1/2001	TRICHLOROETHYLENE (TCE)	7.0E-02		1	1
MW-12C	T	7/1/2002	TRICHLOROETHYLENE (TCE)	4.9E-02		1	1
MW-12C	T	7/1/2003	TRICHLOROETHYLENE (TCE)	5.5E-02		2	2
MW-12C	T	7/1/2004	TRICHLOROETHYLENE (TCE)	3.6E-02		2	2
MW-12C	T	7/1/2005	TRICHLOROETHYLENE (TCE)	2.9E-02		1	1
MW-12C	T	7/1/2006	TRICHLOROETHYLENE (TCE)	1.3E-02		1	1
MW-12C	T	7/1/2007	TRICHLOROETHYLENE (TCE)	7.4E-03		1	1
MW-12C	T	7/1/2008	TRICHLOROETHYLENE (TCE)	1.5E-02		1	1
MW-12C	T	7/1/2009	TRICHLOROETHYLENE (TCE)	1.1E-02		1	1
MW-12C	T	7/1/2010	TRICHLOROETHYLENE (TCE)	2.4E-02		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-13C  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

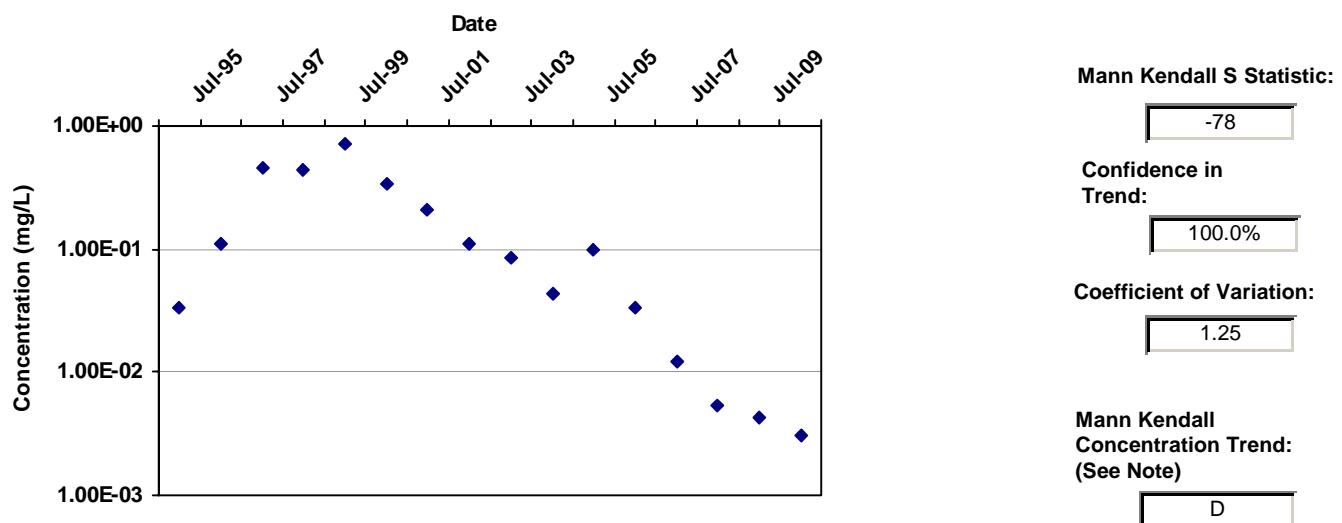
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-13C	T	7/1/1995	TRICHLOROETHYLENE (TCE)	1.4E-02		2	2
MW-13C	T	7/1/1996	TRICHLOROETHYLENE (TCE)	2.7E-02		2	2
MW-13C	T	7/1/1997	TRICHLOROETHYLENE (TCE)	2.0E-02		2	2
MW-13C	T	7/1/1998	TRICHLOROETHYLENE (TCE)	9.5E-03		2	2
MW-13C	T	7/1/1999	TRICHLOROETHYLENE (TCE)	1.2E-02		2	2
MW-13C	T	7/1/2000	TRICHLOROETHYLENE (TCE)	1.2E-02		2	2
MW-13C	T	7/1/2001	TRICHLOROETHYLENE (TCE)	8.8E-03		2	2
MW-13C	T	7/1/2002	TRICHLOROETHYLENE (TCE)	5.7E-03		2	2
MW-13C	T	7/1/2003	TRICHLOROETHYLENE (TCE)	7.9E-03		2	2
MW-13C	T	7/1/2004	TRICHLOROETHYLENE (TCE)	4.9E-03		2	2
MW-13C	T	7/1/2005	TRICHLOROETHYLENE (TCE)	2.8E-03		1	1
MW-13C	T	7/1/2006	TRICHLOROETHYLENE (TCE)	2.2E-03		1	1
MW-13C	T	7/1/2007	TRICHLOROETHYLENE (TCE)	2.4E-03		1	1
MW-13C	T	7/1/2008	TRICHLOROETHYLENE (TCE)	2.1E-03		1	1
MW-13C	T	7/1/2009	TRICHLOROETHYLENE (TCE)	5.6E-03		1	1
MW-13C	T	7/1/2010	TRICHLOROETHYLENE (TCE)	5.7E-03		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** PW-1B  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
PW-1B	T	7/1/1995	TRICHLOROETHYLENE (TCE)	3.3E-02		11	11
PW-1B	T	7/1/1996	TRICHLOROETHYLENE (TCE)	1.1E-01		12	12
PW-1B	T	7/1/1997	TRICHLOROETHYLENE (TCE)	4.6E-01		9	9
PW-1B	T	7/1/1998	TRICHLOROETHYLENE (TCE)	4.3E-01		3	3
PW-1B	T	7/1/1999	TRICHLOROETHYLENE (TCE)	7.2E-01		2	2
PW-1B	T	7/1/2000	TRICHLOROETHYLENE (TCE)	3.3E-01		3	3
PW-1B	T	7/1/2001	TRICHLOROETHYLENE (TCE)	2.1E-01		3	3
PW-1B	T	7/1/2002	TRICHLOROETHYLENE (TCE)	1.1E-01		4	4
PW-1B	T	7/1/2003	TRICHLOROETHYLENE (TCE)	8.5E-02		3	3
PW-1B	T	7/1/2004	TRICHLOROETHYLENE (TCE)	4.4E-02		2	2
PW-1B	T	7/1/2005	TRICHLOROETHYLENE (TCE)	9.7E-02		2	2
PW-1B	T	7/1/2006	TRICHLOROETHYLENE (TCE)	3.4E-02		2	2
PW-1B	T	7/1/2007	TRICHLOROETHYLENE (TCE)	1.2E-02		2	2
PW-1B	T	7/1/2008	TRICHLOROETHYLENE (TCE)	5.3E-03		2	2
PW-1B	T	7/1/2009	TRICHLOROETHYLENE (TCE)	4.3E-03		2	2
PW-1B	T	7/1/2010	TRICHLOROETHYLENE (TCE)	3.0E-03		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

## **INTERMEDIATE WELLS**

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-16

**Time Period:** 1/19/1995 **to** 10/20/2010

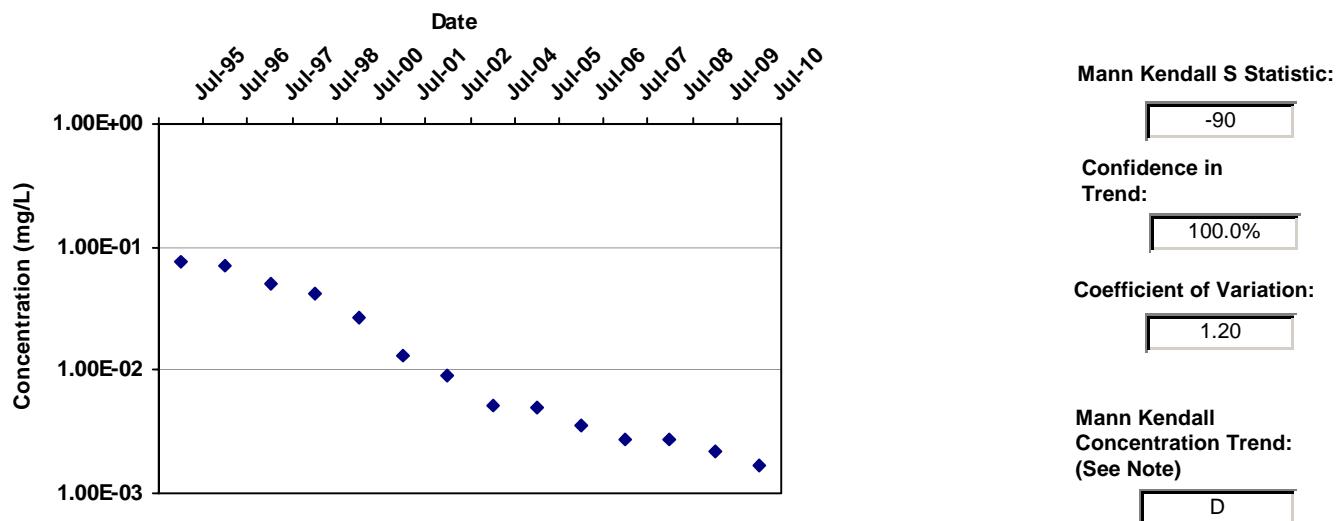
**Consolidation Period:** Yearly

**Consolidation Type:** Geometric Mean

**Duplicate Consolidation:** Maximum

**ND Values:** 1/2 Detection Limit

**J Flag Values :** Actual Value



## Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-16	T	7/1/1995	TRICHLOROETHYLENE (TCE)	7.7E-02		2	2
AMW-16	T	7/1/1996	TRICHLOROETHYLENE (TCE)	6.9E-02		2	2
AMW-16	T	7/1/1997	TRICHLOROETHYLENE (TCE)	5.1E-02		2	2
AMW-16	T	7/1/1998	TRICHLOROETHYLENE (TCE)	4.2E-02		2	2
AMW-16	T	7/1/2000	TRICHLOROETHYLENE (TCE)	2.7E-02		2	2
AMW-16	T	7/1/2001	TRICHLOROETHYLENE (TCE)	1.3E-02		1	1
AMW-16	T	7/1/2002	TRICHLOROETHYLENE (TCE)	9.0E-03		1	1
AMW-16	T	7/1/2004	TRICHLOROETHYLENE (TCE)	5.1E-03		1	1
AMW-16	T	7/1/2005	TRICHLOROETHYLENE (TCE)	5.0E-03		1	1
AMW-16	T	7/1/2006	TRICHLOROETHYLENE (TCE)	3.6E-03		1	1
AMW-16	T	7/1/2007	TRICHLOROETHYLENE (TCE)	2.7E-03		1	1
AMW-16	T	7/1/2008	TRICHLOROETHYLENE (TCE)	2.7E-03		1	1
AMW-16	T	7/1/2009	TRICHLOROETHYLENE (TCE)	2.2E-03		1	1
AMW-16	T	7/1/2010	TRICHLOROETHYLENE (TCE)	1.7E-03		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-17

**Time Period:** 1/19/1995 **to** 10/20/2010

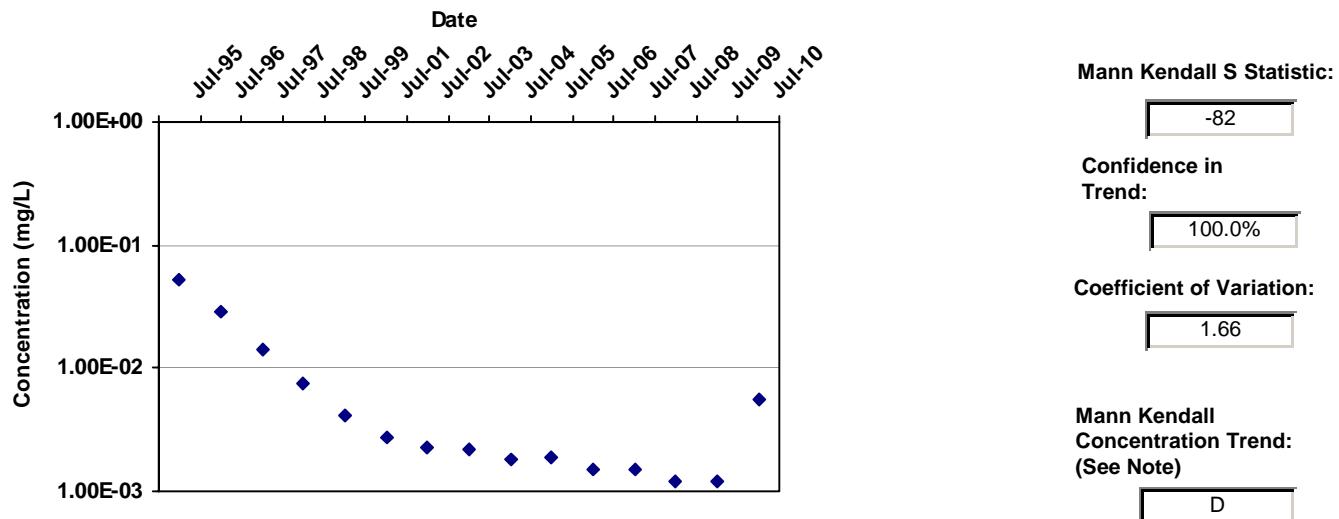
**Consolidation Period:** Yearly

**Consolidation Type:** Geometric Mean

**Duplicate Consolidation:** Maximum

**ND Values:** 1/2 Detection Limit

**J Flag Values :** Actual Value



## Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-17	T	7/1/1995	TRICHLOROETHYLENE (TCE)	5.3E-02		2	2
AMW-17	T	7/1/1996	TRICHLOROETHYLENE (TCE)	2.8E-02		2	2
AMW-17	T	7/1/1997	TRICHLOROETHYLENE (TCE)	1.4E-02		2	2
AMW-17	T	7/1/1998	TRICHLOROETHYLENE (TCE)	7.5E-03		2	2
AMW-17	T	7/1/1999	TRICHLOROETHYLENE (TCE)	4.1E-03		2	2
AMW-17	T	7/1/2001	TRICHLOROETHYLENE (TCE)	2.7E-03		1	1
AMW-17	T	7/1/2002	TRICHLOROETHYLENE (TCE)	2.3E-03		1	1
AMW-17	T	7/1/2003	TRICHLOROETHYLENE (TCE)	2.2E-03		1	1
AMW-17	T	7/1/2004	TRICHLOROETHYLENE (TCE)	1.8E-03		1	1
AMW-17	T	7/1/2005	TRICHLOROETHYLENE (TCE)	1.9E-03		1	1
AMW-17	T	7/1/2006	TRICHLOROETHYLENE (TCE)	1.5E-03		1	1
AMW-17	T	7/1/2007	TRICHLOROETHYLENE (TCE)	1.5E-03		1	1
AMW-17	T	7/1/2008	TRICHLOROETHYLENE (TCE)	1.2E-03		1	1
AMW-17	T	7/1/2009	TRICHLOROETHYLENE (TCE)	1.2E-03		3	3
AMW-17	T	7/1/2010	TRICHLOROETHYLENE (TCE)	5.5E-03		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-18

**Time Period:** 1/19/1995 **to** 10/20/2010

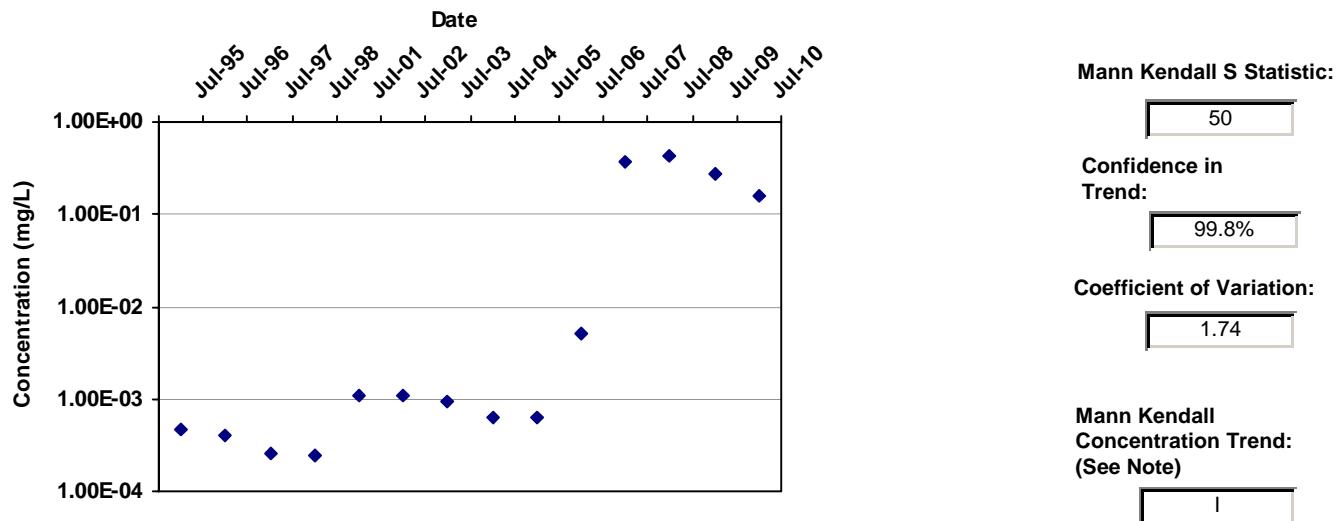
**Consolidation Period:** Yearly

**Consolidation Type:** Geometric Mean

**Duplicate Consolidation:** Maximum

**ND Values:** 1/2 Detection Limit

**J Flag Values :** Actual Value



## Data Table:

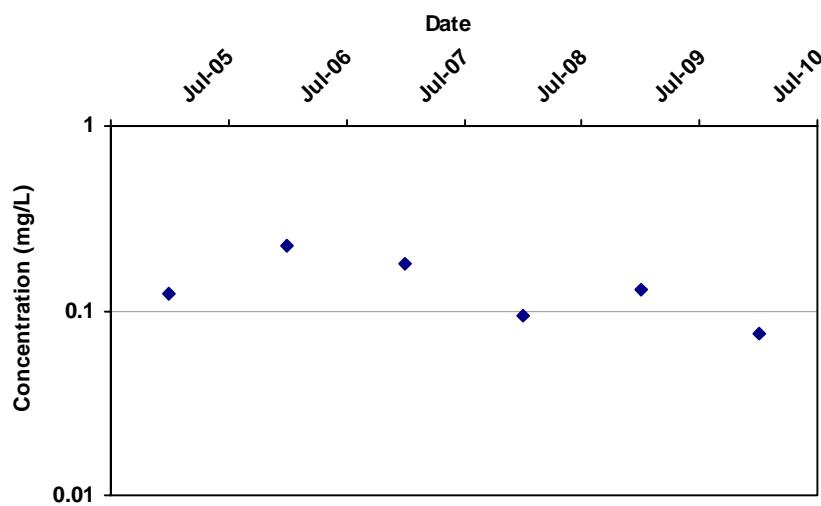
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-18	T	7/1/1995	TRICHLOROETHYLENE (TCE)	4.7E-04		2	2
AMW-18	T	7/1/1996	TRICHLOROETHYLENE (TCE)	3.9E-04		2	1
AMW-18	T	7/1/1997	TRICHLOROETHYLENE (TCE)	2.5E-04		2	1
AMW-18	T	7/1/1998	TRICHLOROETHYLENE (TCE)	2.5E-04		1	0
AMW-18	T	7/1/2001	TRICHLOROETHYLENE (TCE)	1.1E-03	ND	1	1
AMW-18	T	7/1/2002	TRICHLOROETHYLENE (TCE)	1.1E-03		1	1
AMW-18	T	7/1/2003	TRICHLOROETHYLENE (TCE)	9.5E-04		1	1
AMW-18	T	7/1/2004	TRICHLOROETHYLENE (TCE)	6.4E-04		1	1
AMW-18	T	7/1/2005	TRICHLOROETHYLENE (TCE)	6.2E-04		1	1
AMW-18	T	7/1/2006	TRICHLOROETHYLENE (TCE)	5.1E-03		1	1
AMW-18	T	7/1/2007	TRICHLOROETHYLENE (TCE)	3.7E-01		2	2
AMW-18	T	7/1/2008	TRICHLOROETHYLENE (TCE)	4.3E-01		4	4
AMW-18	T	7/1/2009	TRICHLOROETHYLENE (TCE)	2.7E-01		3	3
AMW-18	T	7/1/2010	TRICHLOROETHYLENE (TCE)	1.6E-01		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-59  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



**Mann Kendall S Statistic:**

-7

**Confidence in Trend:**

86.4%

**Coefficient of Variation:**

0.40

**Mann Kendall Concentration Trend: (See Note)**

S

## Data Table:

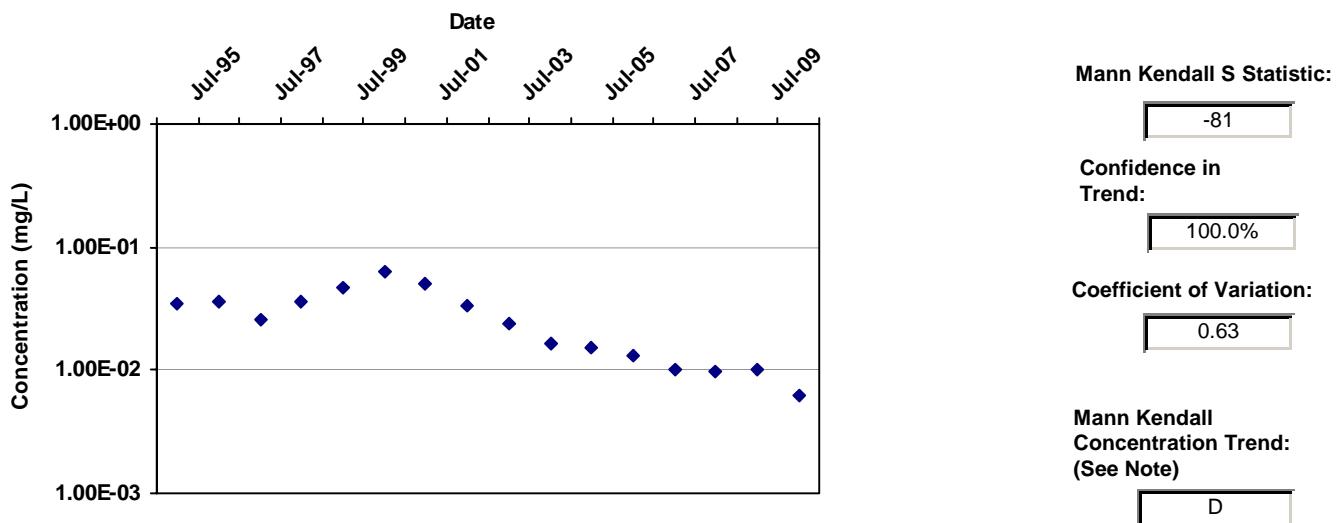
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-59	T	7/1/2005	TRICHLOROETHYLENE (TCE)	1.2E-01		3	3
AMW-59	T	7/1/2006	TRICHLOROETHYLENE (TCE)	2.2E-01		2	2
AMW-59	T	7/1/2007	TRICHLOROETHYLENE (TCE)	1.8E-01		1	1
AMW-59	T	7/1/2008	TRICHLOROETHYLENE (TCE)	9.5E-02		1	1
AMW-59	T	7/1/2009	TRICHLOROETHYLENE (TCE)	1.3E-01		1	1
AMW-59	T	7/1/2010	TRICHLOROETHYLENE (TCE)	7.6E-02		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** CPU-14  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
CPU-14	T	7/1/1995	TRICHLOROETHYLENE (TCE)	3.4E-02		2	2
CPU-14	T	7/1/1996	TRICHLOROETHYLENE (TCE)	3.6E-02		2	2
CPU-14	T	7/1/1997	TRICHLOROETHYLENE (TCE)	2.6E-02		1	1
CPU-14	T	7/1/1998	TRICHLOROETHYLENE (TCE)	3.6E-02		2	2
CPU-14	T	7/1/1999	TRICHLOROETHYLENE (TCE)	4.7E-02		2	2
CPU-14	T	7/1/2000	TRICHLOROETHYLENE (TCE)	6.3E-02		2	2
CPU-14	T	7/1/2001	TRICHLOROETHYLENE (TCE)	5.1E-02		2	2
CPU-14	T	7/1/2002	TRICHLOROETHYLENE (TCE)	3.3E-02		2	2
CPU-14	T	7/1/2003	TRICHLOROETHYLENE (TCE)	2.3E-02		2	2
CPU-14	T	7/1/2004	TRICHLOROETHYLENE (TCE)	1.6E-02		2	2
CPU-14	T	7/1/2005	TRICHLOROETHYLENE (TCE)	1.5E-02		2	2
CPU-14	T	7/1/2006	TRICHLOROETHYLENE (TCE)	1.3E-02		1	1
CPU-14	T	7/1/2007	TRICHLOROETHYLENE (TCE)	1.0E-02		1	1
CPU-14	T	7/1/2008	TRICHLOROETHYLENE (TCE)	9.8E-03		1	1
CPU-14	T	7/1/2009	TRICHLOROETHYLENE (TCE)	1.0E-02		1	1
CPU-14	T	7/1/2010	TRICHLOROETHYLENE (TCE)	6.1E-03		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-14C

**Time Period:** 1/19/1995 **to** 10/20/2010

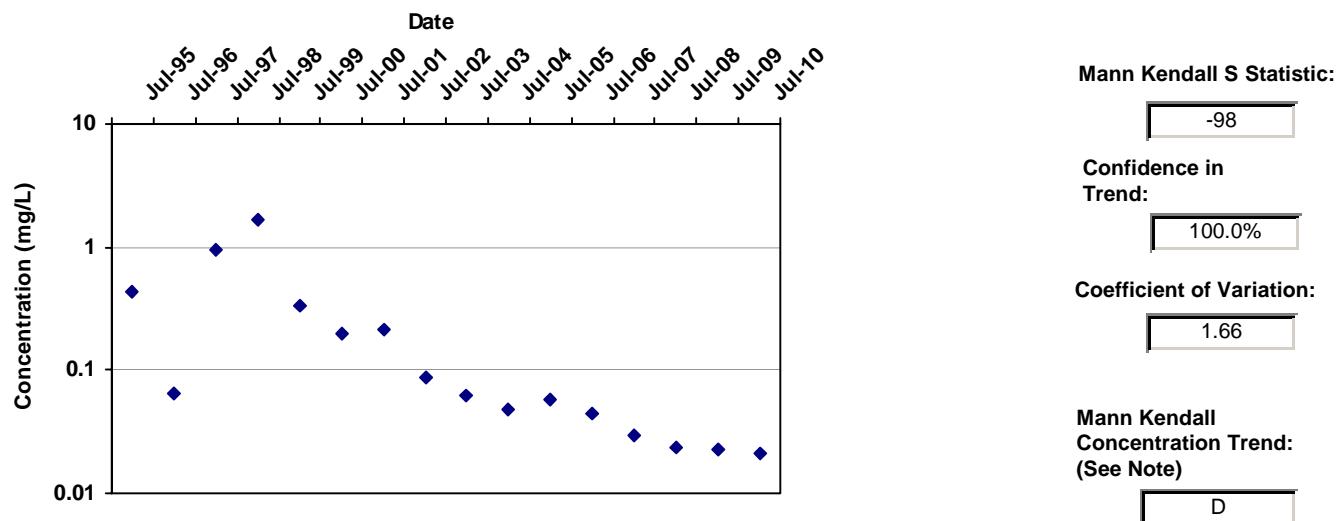
**Consolidation Period:** Yearly

**Consolidation Type:** Geometric Mean

**Duplicate Consolidation:** Maximum

**ND Values:** 1/2 Detection Limit

**J Flag Values :** Actual Value



## Data Table:

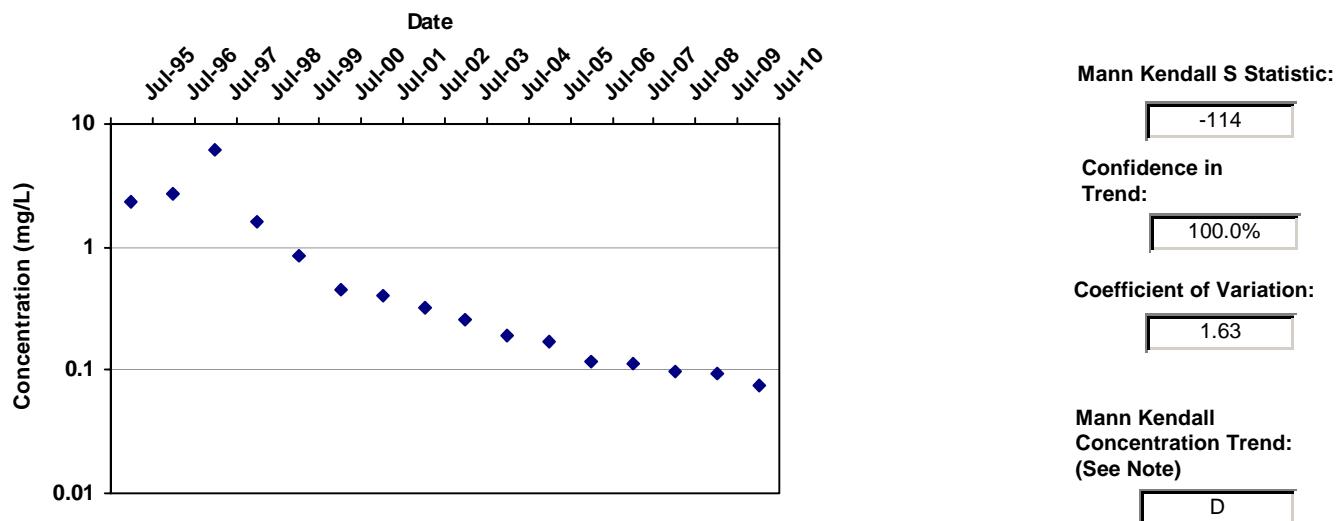
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-14C	T	7/1/1995	TRICHLOROETHYLENE (TCE)	4.4E-01		11	11
MW-14C	T	7/1/1996	TRICHLOROETHYLENE (TCE)	6.5E-02		2	2
MW-14C	T	7/1/1997	TRICHLOROETHYLENE (TCE)	9.4E-01		6	6
MW-14C	T	7/1/1998	TRICHLOROETHYLENE (TCE)	1.7E+00		2	2
MW-14C	T	7/1/1999	TRICHLOROETHYLENE (TCE)	3.3E-01		2	2
MW-14C	T	7/1/2000	TRICHLOROETHYLENE (TCE)	2.0E-01		3	3
MW-14C	T	7/1/2001	TRICHLOROETHYLENE (TCE)	2.1E-01		3	3
MW-14C	T	7/1/2002	TRICHLOROETHYLENE (TCE)	8.9E-02		4	4
MW-14C	T	7/1/2003	TRICHLOROETHYLENE (TCE)	6.3E-02		3	3
MW-14C	T	7/1/2004	TRICHLOROETHYLENE (TCE)	4.8E-02		2	2
MW-14C	T	7/1/2005	TRICHLOROETHYLENE (TCE)	5.7E-02		2	2
MW-14C	T	7/1/2006	TRICHLOROETHYLENE (TCE)	4.4E-02		2	2
MW-14C	T	7/1/2007	TRICHLOROETHYLENE (TCE)	2.9E-02		2	2
MW-14C	T	7/1/2008	TRICHLOROETHYLENE (TCE)	2.4E-02		2	2
MW-14C	T	7/1/2009	TRICHLOROETHYLENE (TCE)	2.2E-02		2	2
MW-14C	T	7/1/2010	TRICHLOROETHYLENE (TCE)	2.1E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-14E  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

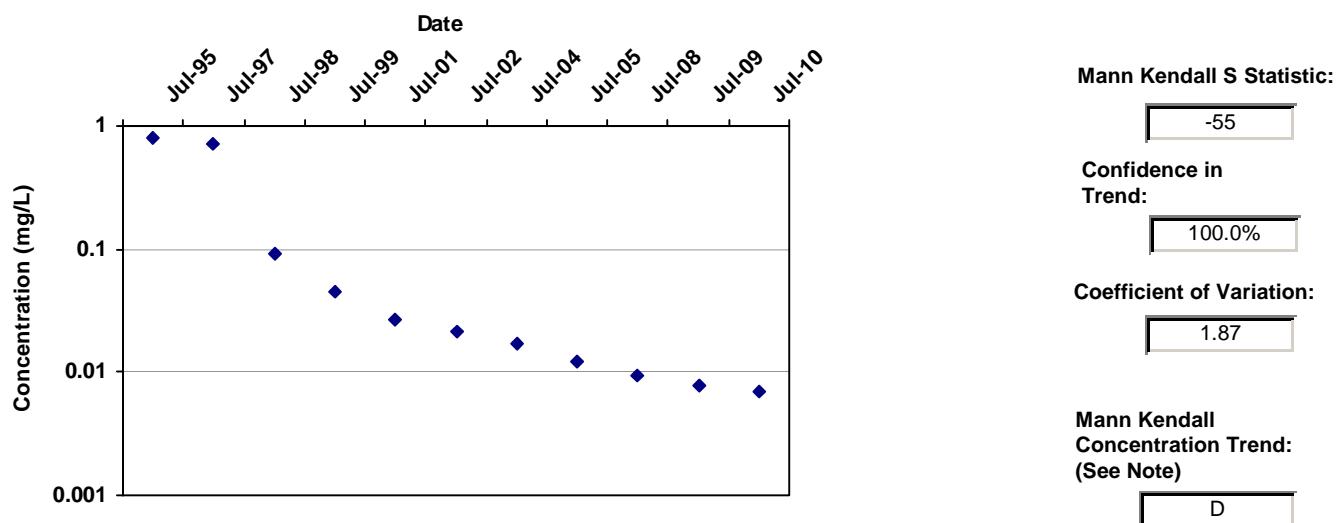
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-14E	T	7/1/1995	TRICHLOROETHYLENE (TCE)	2.3E+00		11	11
MW-14E	T	7/1/1996	TRICHLOROETHYLENE (TCE)	2.7E+00		2	2
MW-14E	T	7/1/1997	TRICHLOROETHYLENE (TCE)	6.3E+00		2	2
MW-14E	T	7/1/1998	TRICHLOROETHYLENE (TCE)	1.6E+00		3	3
MW-14E	T	7/1/1999	TRICHLOROETHYLENE (TCE)	8.4E-01		2	2
MW-14E	T	7/1/2000	TRICHLOROETHYLENE (TCE)	4.5E-01		3	3
MW-14E	T	7/1/2001	TRICHLOROETHYLENE (TCE)	4.0E-01		3	3
MW-14E	T	7/1/2002	TRICHLOROETHYLENE (TCE)	3.3E-01		4	4
MW-14E	T	7/1/2003	TRICHLOROETHYLENE (TCE)	2.6E-01		3	3
MW-14E	T	7/1/2004	TRICHLOROETHYLENE (TCE)	1.9E-01		2	2
MW-14E	T	7/1/2005	TRICHLOROETHYLENE (TCE)	1.7E-01		2	2
MW-14E	T	7/1/2006	TRICHLOROETHYLENE (TCE)	1.2E-01		2	2
MW-14E	T	7/1/2007	TRICHLOROETHYLENE (TCE)	1.1E-01		2	2
MW-14E	T	7/1/2008	TRICHLOROETHYLENE (TCE)	9.7E-02		2	2
MW-14E	T	7/1/2009	TRICHLOROETHYLENE (TCE)	9.3E-02		2	2
MW-14E	T	7/1/2010	TRICHLOROETHYLENE (TCE)	7.4E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-15E  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

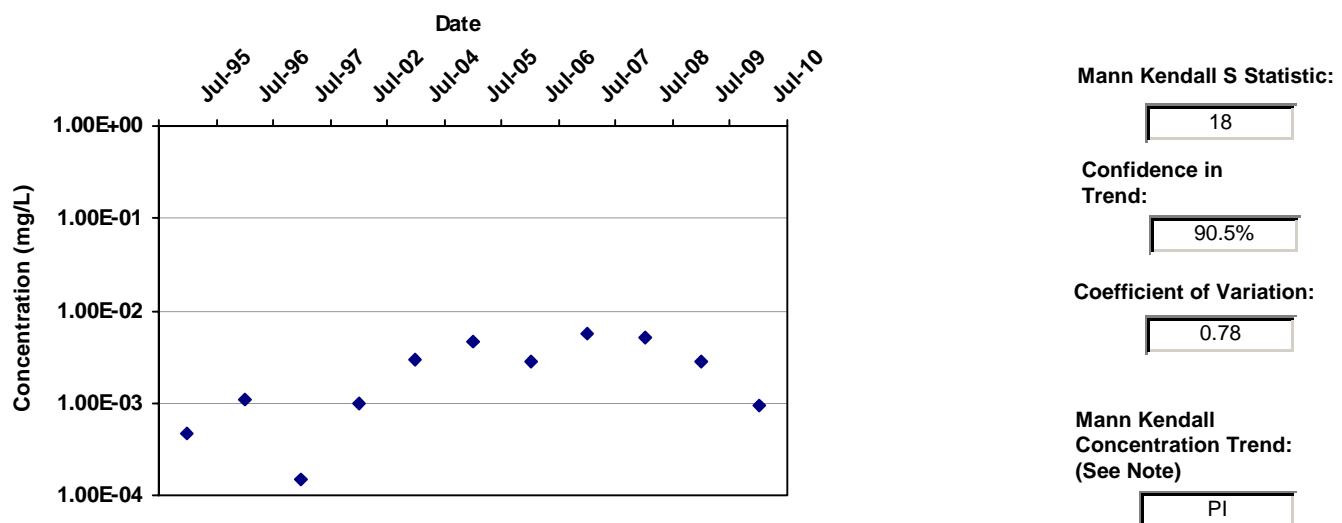
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-15E	T	7/1/1995	TRICHLOROETHYLENE (TCE)	8.1E-01		2	2
MW-15E	T	7/1/1997	TRICHLOROETHYLENE (TCE)	7.0E-01		2	2
MW-15E	T	7/1/1998	TRICHLOROETHYLENE (TCE)	9.2E-02		2	2
MW-15E	T	7/1/1999	TRICHLOROETHYLENE (TCE)	4.5E-02		2	2
MW-15E	T	7/1/2001	TRICHLOROETHYLENE (TCE)	2.7E-02		1	1
MW-15E	T	7/1/2002	TRICHLOROETHYLENE (TCE)	2.1E-02		1	1
MW-15E	T	7/1/2004	TRICHLOROETHYLENE (TCE)	1.7E-02		1	1
MW-15E	T	7/1/2005	TRICHLOROETHYLENE (TCE)	1.2E-02		1	1
MW-15E	T	7/1/2008	TRICHLOROETHYLENE (TCE)	9.5E-03		2	2
MW-15E	T	7/1/2009	TRICHLOROETHYLENE (TCE)	7.9E-03		2	2
MW-15E	T	7/1/2010	TRICHLOROETHYLENE (TCE)	6.9E-03		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-16E  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

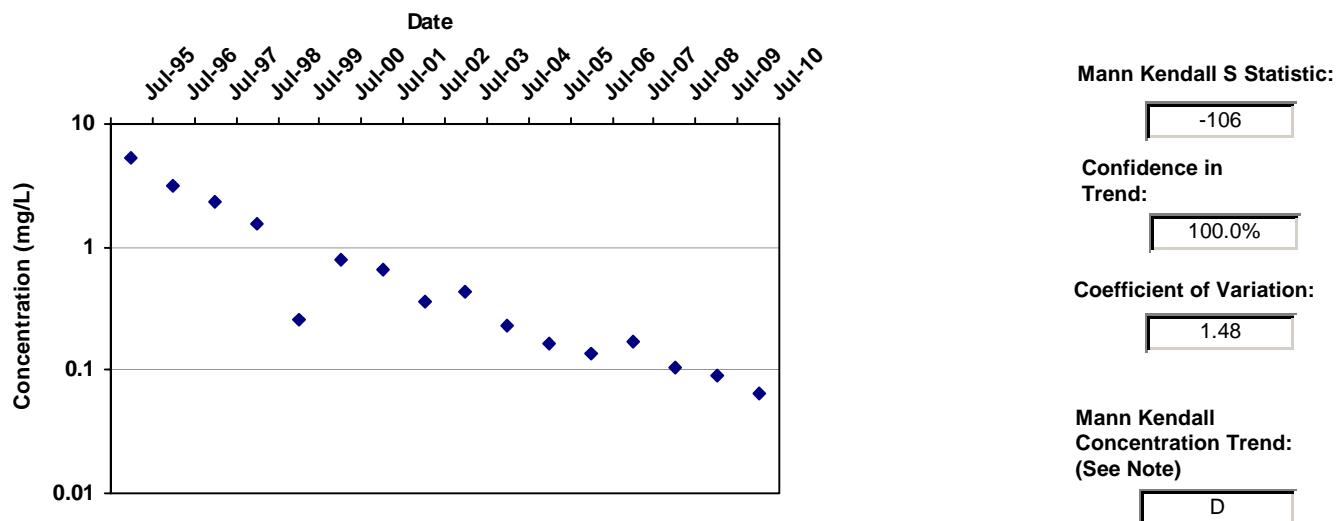
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-16E	T	7/1/1995	TRICHLOROETHYLENE (TCE)	4.6E-04		2	2
MW-16E	T	7/1/1996	TRICHLOROETHYLENE (TCE)	1.1E-03		2	2
MW-16E	T	7/1/1997	TRICHLOROETHYLENE (TCE)	1.5E-04		1	0
MW-16E	T	7/1/2002	TRICHLOROETHYLENE (TCE)	1.0E-03		1	1
MW-16E	T	7/1/2004	TRICHLOROETHYLENE (TCE)	3.0E-03		1	1
MW-16E	T	7/1/2005	TRICHLOROETHYLENE (TCE)	4.6E-03		1	1
MW-16E	T	7/1/2006	TRICHLOROETHYLENE (TCE)	2.8E-03		1	1
MW-16E	T	7/1/2007	TRICHLOROETHYLENE (TCE)	5.7E-03		1	1
MW-16E	T	7/1/2008	TRICHLOROETHYLENE (TCE)	5.1E-03		1	1
MW-16E	T	7/1/2009	TRICHLOROETHYLENE (TCE)	2.8E-03		1	1
MW-16E	T	7/1/2010	TRICHLOROETHYLENE (TCE)	9.2E-04		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-18D  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

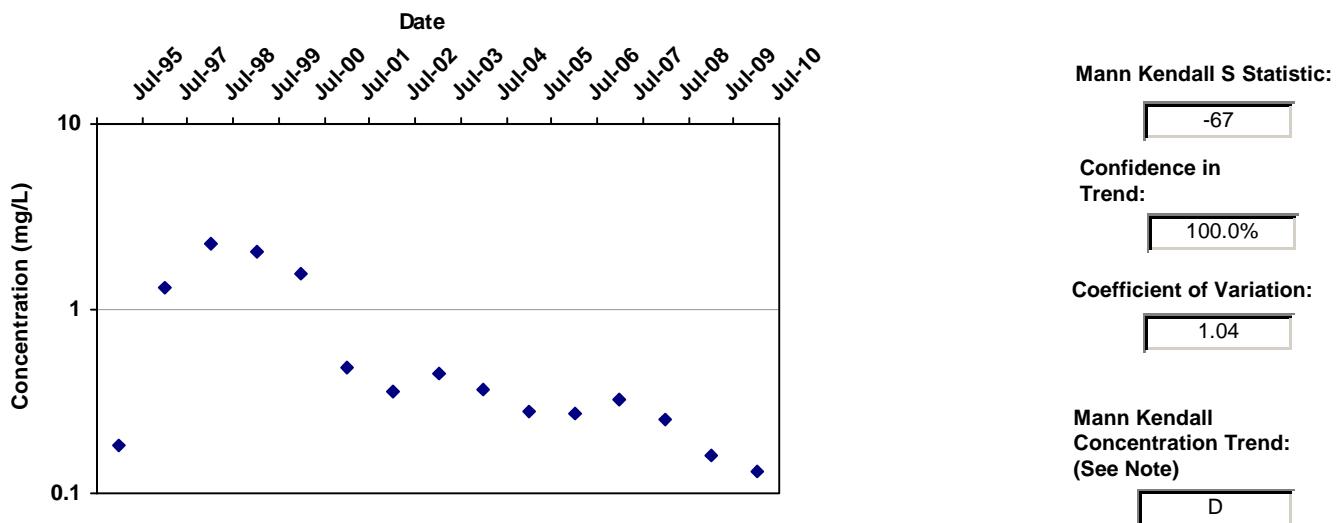
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-18D	T	7/1/1995	TRICHLOROETHYLENE (TCE)	5.3E+00		11	11
MW-18D	T	7/1/1996	TRICHLOROETHYLENE (TCE)	3.2E+00		8	8
MW-18D	T	7/1/1997	TRICHLOROETHYLENE (TCE)	2.3E+00		9	9
MW-18D	T	7/1/1998	TRICHLOROETHYLENE (TCE)	1.5E+00		3	3
MW-18D	T	7/1/1999	TRICHLOROETHYLENE (TCE)	2.6E-01		2	2
MW-18D	T	7/1/2000	TRICHLOROETHYLENE (TCE)	7.9E-01		3	3
MW-18D	T	7/1/2001	TRICHLOROETHYLENE (TCE)	6.5E-01		2	2
MW-18D	T	7/1/2002	TRICHLOROETHYLENE (TCE)	3.6E-01		4	4
MW-18D	T	7/1/2003	TRICHLOROETHYLENE (TCE)	4.4E-01		3	3
MW-18D	T	7/1/2004	TRICHLOROETHYLENE (TCE)	2.3E-01		2	2
MW-18D	T	7/1/2005	TRICHLOROETHYLENE (TCE)	1.6E-01		2	2
MW-18D	T	7/1/2006	TRICHLOROETHYLENE (TCE)	1.3E-01		2	2
MW-18D	T	7/1/2007	TRICHLOROETHYLENE (TCE)	1.7E-01		2	2
MW-18D	T	7/1/2008	TRICHLOROETHYLENE (TCE)	1.1E-01		2	2
MW-18D	T	7/1/2009	TRICHLOROETHYLENE (TCE)	9.1E-02		2	2
MW-18D	T	7/1/2010	TRICHLOROETHYLENE (TCE)	6.4E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-18E  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

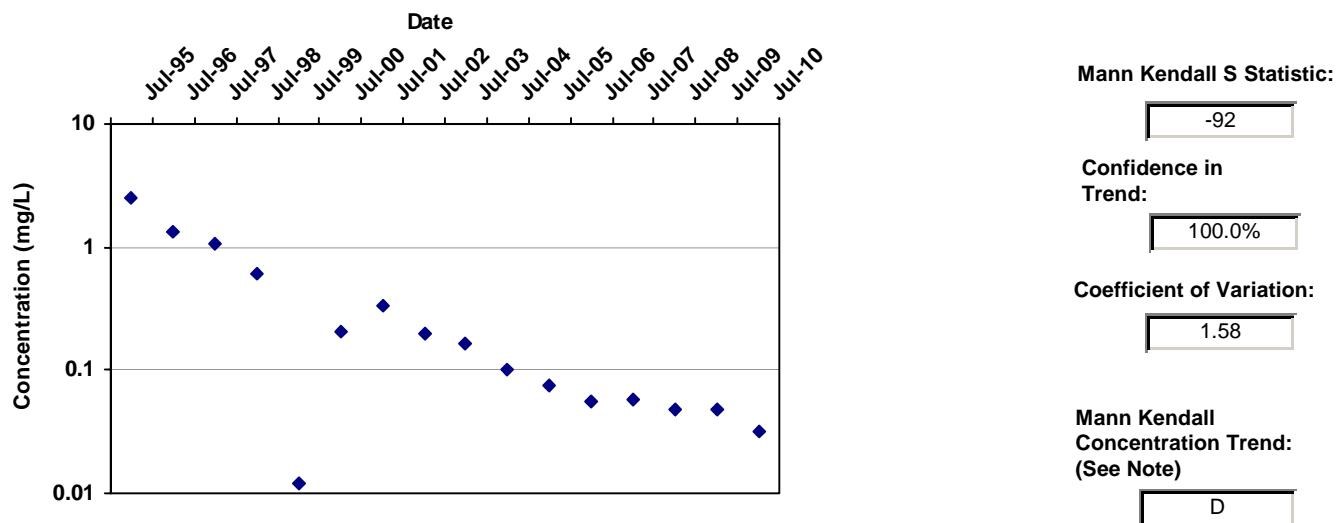
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-18E	T	7/1/1995	TRICHLOROETHYLENE (TCE)	1.8E-01		2	2
MW-18E	T	7/1/1997	TRICHLOROETHYLENE (TCE)	1.3E+00		2	2
MW-18E	T	7/1/1998	TRICHLOROETHYLENE (TCE)	2.3E+00		2	2
MW-18E	T	7/1/1999	TRICHLOROETHYLENE (TCE)	2.0E+00		2	2
MW-18E	T	7/1/2000	TRICHLOROETHYLENE (TCE)	1.5E+00		2	2
MW-18E	T	7/1/2001	TRICHLOROETHYLENE (TCE)	4.8E-01		3	3
MW-18E	T	7/1/2002	TRICHLOROETHYLENE (TCE)	3.6E-01		2	2
MW-18E	T	7/1/2003	TRICHLOROETHYLENE (TCE)	4.4E-01		2	2
MW-18E	T	7/1/2004	TRICHLOROETHYLENE (TCE)	3.6E-01		2	2
MW-18E	T	7/1/2005	TRICHLOROETHYLENE (TCE)	2.8E-01		1	1
MW-18E	T	7/1/2006	TRICHLOROETHYLENE (TCE)	2.7E-01		2	2
MW-18E	T	7/1/2007	TRICHLOROETHYLENE (TCE)	3.2E-01		1	1
MW-18E	T	7/1/2008	TRICHLOROETHYLENE (TCE)	2.5E-01		1	1
MW-18E	T	7/1/2009	TRICHLOROETHYLENE (TCE)	1.6E-01		1	1
MW-18E	T	7/1/2010	TRICHLOROETHYLENE (TCE)	1.3E-01		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-19D  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-19D	T	7/1/1995	TRICHLOROETHYLENE (TCE)	2.5E+00		11	11
MW-19D	T	7/1/1996	TRICHLOROETHYLENE (TCE)	1.3E+00		12	12
MW-19D	T	7/1/1997	TRICHLOROETHYLENE (TCE)	1.1E+00		6	6
MW-19D	T	7/1/1998	TRICHLOROETHYLENE (TCE)	6.1E-01		3	3
MW-19D	T	7/1/1999	TRICHLOROETHYLENE (TCE)	1.2E-02		1	1
MW-19D	T	7/1/2000	TRICHLOROETHYLENE (TCE)	2.1E-01		3	3
MW-19D	T	7/1/2001	TRICHLOROETHYLENE (TCE)	3.4E-01		3	3
MW-19D	T	7/1/2002	TRICHLOROETHYLENE (TCE)	2.0E-01		4	4
MW-19D	T	7/1/2003	TRICHLOROETHYLENE (TCE)	1.7E-01		3	3
MW-19D	T	7/1/2004	TRICHLOROETHYLENE (TCE)	1.0E-01		2	2
MW-19D	T	7/1/2005	TRICHLOROETHYLENE (TCE)	7.5E-02		2	2
MW-19D	T	7/1/2006	TRICHLOROETHYLENE (TCE)	5.6E-02		2	2
MW-19D	T	7/1/2007	TRICHLOROETHYLENE (TCE)	5.8E-02		2	2
MW-19D	T	7/1/2008	TRICHLOROETHYLENE (TCE)	4.7E-02		2	2
MW-19D	T	7/1/2009	TRICHLOROETHYLENE (TCE)	4.8E-02		2	2
MW-19D	T	7/1/2010	TRICHLOROETHYLENE (TCE)	3.2E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-20D

**Well Type:** T

**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010

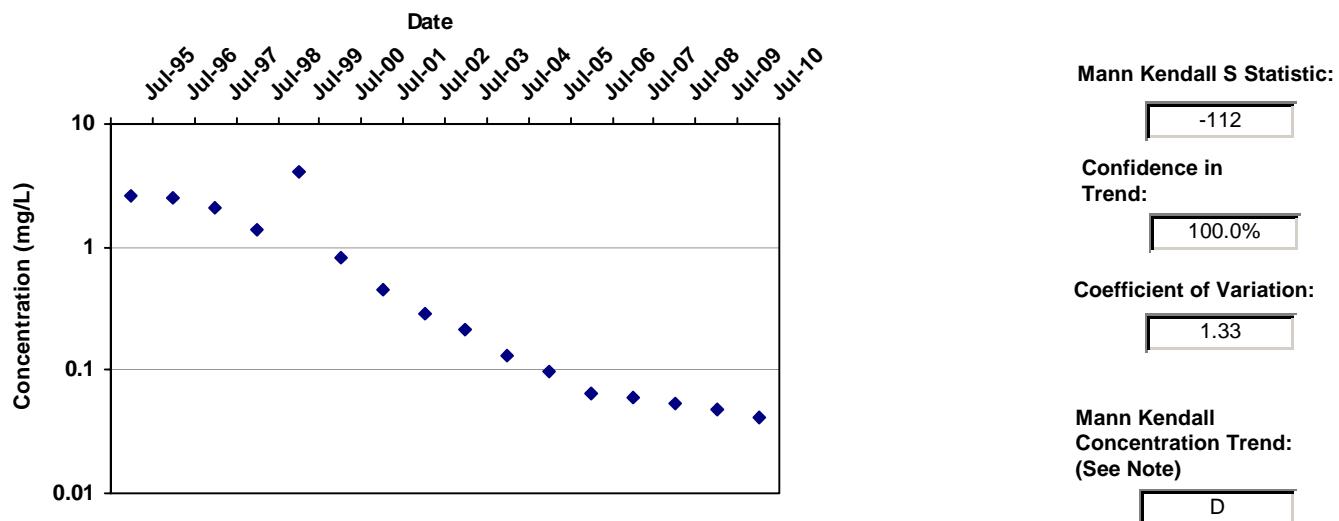
**Consolidation Period:** Yearly

**Consolidation Type:** Geometric Mean

**Duplicate Consolidation:** Maximum

**ND Values:** 1/2 Detection Limit

**J Flag Values :** Actual Value



## Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-20D	T	7/1/1995	TRICHLOROETHYLENE (TCE)	2.6E+00		11	11
MW-20D	T	7/1/1996	TRICHLOROETHYLENE (TCE)	2.5E+00		12	12
MW-20D	T	7/1/1997	TRICHLOROETHYLENE (TCE)	2.1E+00		9	9
MW-20D	T	7/1/1998	TRICHLOROETHYLENE (TCE)	1.4E+00		3	3
MW-20D	T	7/1/1999	TRICHLOROETHYLENE (TCE)	4.1E+00		1	1
MW-20D	T	7/1/2000	TRICHLOROETHYLENE (TCE)	8.2E-01		3	3
MW-20D	T	7/1/2001	TRICHLOROETHYLENE (TCE)	4.5E-01		3	3
MW-20D	T	7/1/2002	TRICHLOROETHYLENE (TCE)	2.9E-01		4	4
MW-20D	T	7/1/2003	TRICHLOROETHYLENE (TCE)	2.1E-01		3	3
MW-20D	T	7/1/2004	TRICHLOROETHYLENE (TCE)	1.3E-01		2	2
MW-20D	T	7/1/2005	TRICHLOROETHYLENE (TCE)	9.6E-02		2	2
MW-20D	T	7/1/2006	TRICHLOROETHYLENE (TCE)	6.4E-02		2	2
MW-20D	T	7/1/2007	TRICHLOROETHYLENE (TCE)	6.0E-02		2	2
MW-20D	T	7/1/2008	TRICHLOROETHYLENE (TCE)	5.3E-02		2	2
MW-20D	T	7/1/2009	TRICHLOROETHYLENE (TCE)	4.7E-02		2	2
MW-20D	T	7/1/2010	TRICHLOROETHYLENE (TCE)	4.2E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

**CHURCH OF GOD WELLS**

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-14

**Time Period:** 1/19/1995    to    10/20/2010

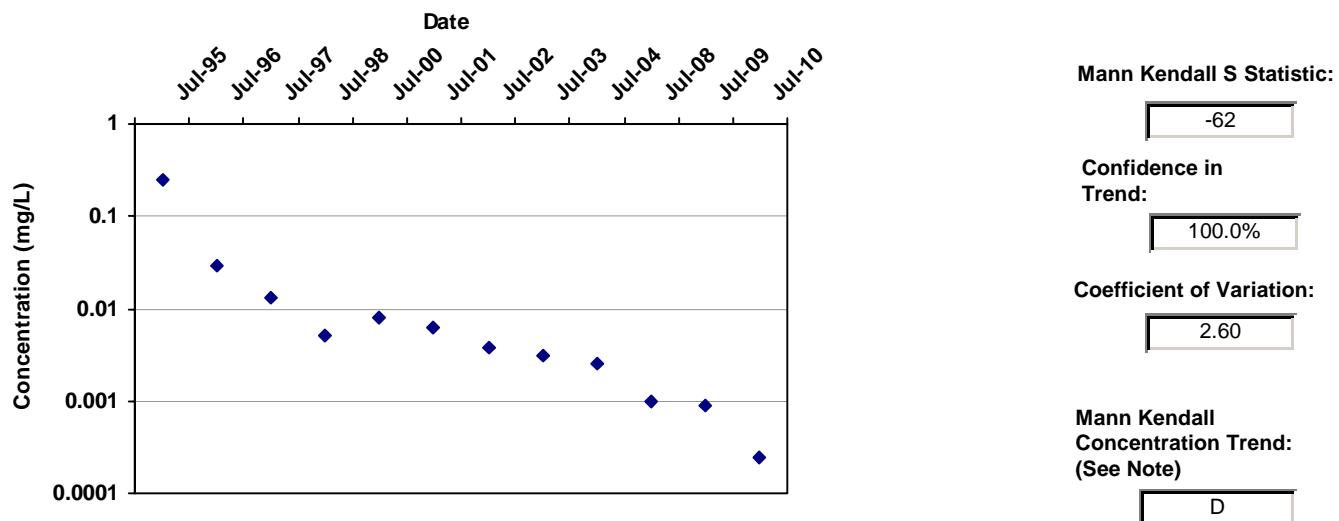
**Consolidation Period:** Yearly

**Consolidation Type:** Geometric Mean

**Duplicate Consolidation:** Maximum

**ND Values:** 1/2 Detection Limit

**J Flag Values :** Actual Value



## Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-14	T	7/1/1995	TRICHLOROETHYLENE (TCE)	2.4E-01		2	2
AMW-14	T	7/1/1996	TRICHLOROETHYLENE (TCE)	3.0E-02		2	2
AMW-14	T	7/1/1997	TRICHLOROETHYLENE (TCE)	1.3E-02		2	2
AMW-14	T	7/1/1998	TRICHLOROETHYLENE (TCE)	5.0E-03		1	1
AMW-14	T	7/1/2000	TRICHLOROETHYLENE (TCE)	7.9E-03		1	1
AMW-14	T	7/1/2001	TRICHLOROETHYLENE (TCE)	6.2E-03		2	2
AMW-14	T	7/1/2002	TRICHLOROETHYLENE (TCE)	3.8E-03		2	2
AMW-14	T	7/1/2003	TRICHLOROETHYLENE (TCE)	3.0E-03		2	2
AMW-14	T	7/1/2004	TRICHLOROETHYLENE (TCE)	2.5E-03		1	1
AMW-14	T	7/1/2008	TRICHLOROETHYLENE (TCE)	1.0E-03		1	1
AMW-14	T	7/1/2009	TRICHLOROETHYLENE (TCE)	8.8E-04		1	1
AMW-14	T	7/1/2010	TRICHLOROETHYLENE (TCE)	2.5E-04	ND	2	0

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-27

**Well Type:** T

**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010

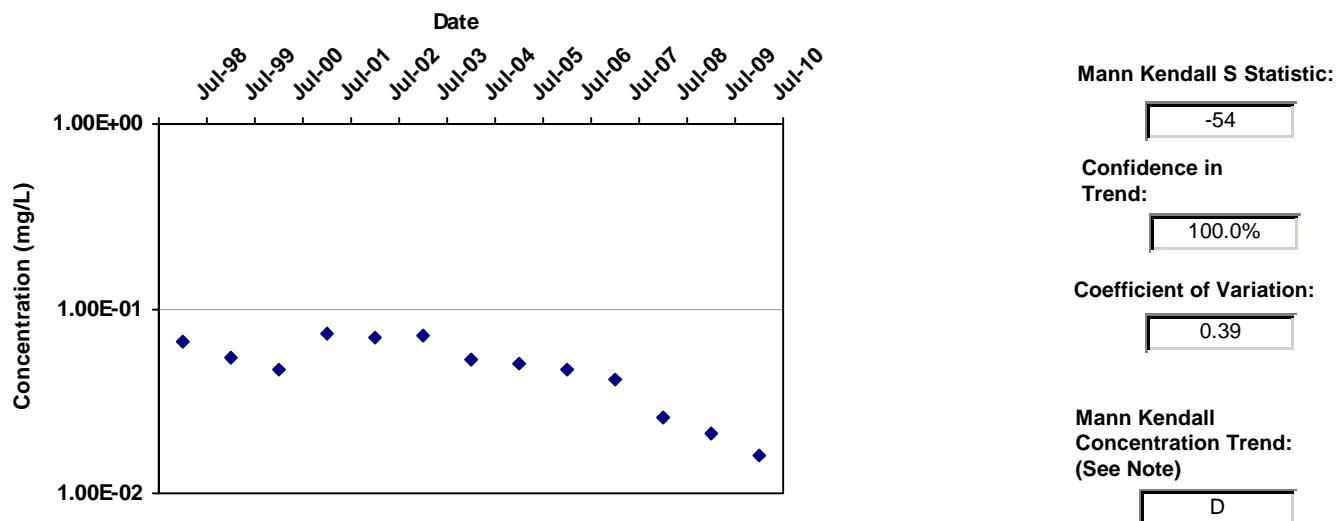
**Consolidation Period:** Yearly

**Consolidation Type:** Geometric Mean

**Duplicate Consolidation:** Maximum

**ND Values:** 1/2 Detection Limit

**J Flag Values :** Actual Value



## Data Table:

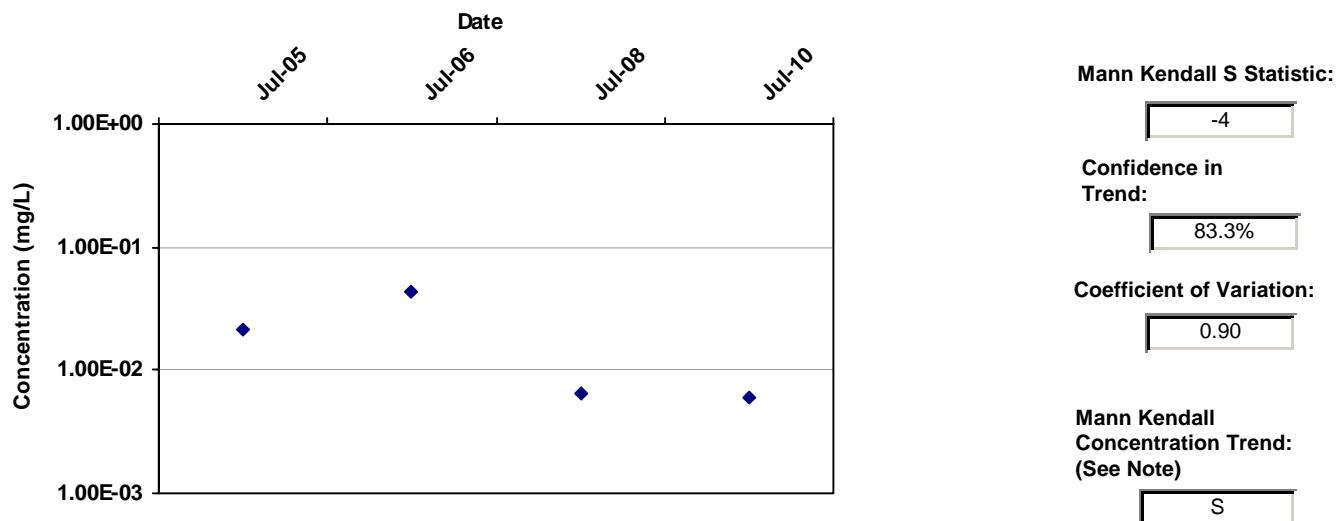
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-27	T	7/1/1998	TRICHLOROETHYLENE (TCE)	6.6E-02		1	1
AMW-27	T	7/1/1999	TRICHLOROETHYLENE (TCE)	5.4E-02		2	2
AMW-27	T	7/1/2000	TRICHLOROETHYLENE (TCE)	4.6E-02		3	3
AMW-27	T	7/1/2001	TRICHLOROETHYLENE (TCE)	7.3E-02		3	3
AMW-27	T	7/1/2002	TRICHLOROETHYLENE (TCE)	7.0E-02		4	4
AMW-27	T	7/1/2003	TRICHLOROETHYLENE (TCE)	7.1E-02		3	3
AMW-27	T	7/1/2004	TRICHLOROETHYLENE (TCE)	5.3E-02		2	2
AMW-27	T	7/1/2005	TRICHLOROETHYLENE (TCE)	5.0E-02		2	2
AMW-27	T	7/1/2006	TRICHLOROETHYLENE (TCE)	4.6E-02		2	2
AMW-27	T	7/1/2007	TRICHLOROETHYLENE (TCE)	4.1E-02		2	2
AMW-27	T	7/1/2008	TRICHLOROETHYLENE (TCE)	2.6E-02		2	2
AMW-27	T	7/1/2009	TRICHLOROETHYLENE (TCE)	2.1E-02		2	2
AMW-27	T	7/1/2010	TRICHLOROETHYLENE (TCE)	1.6E-02		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-61  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

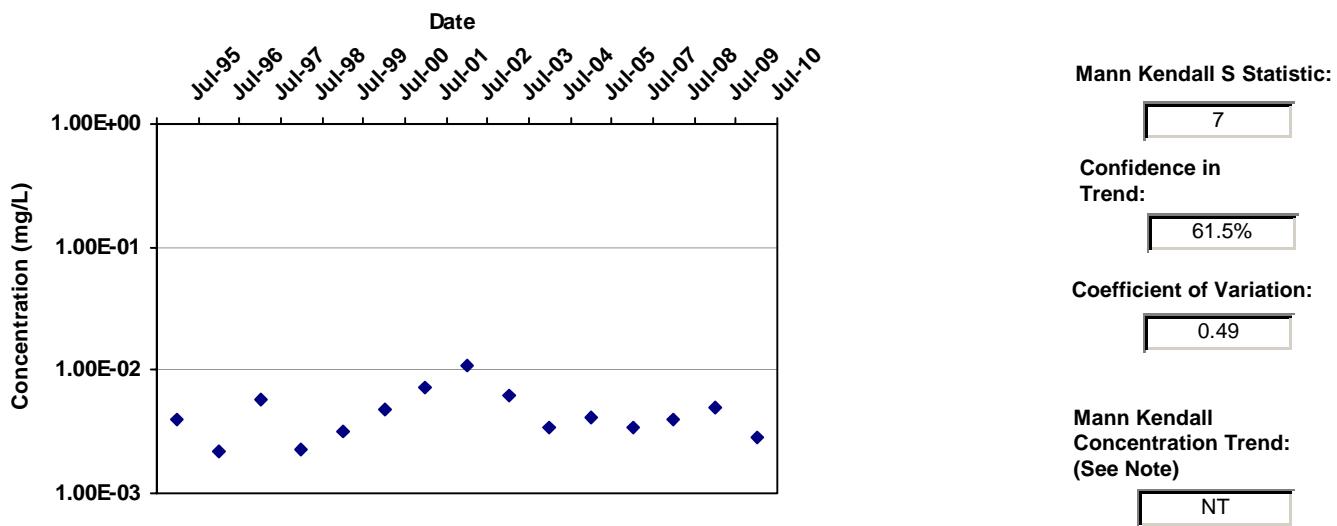
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-61	T	7/1/2005	TRICHLOROETHYLENE (TCE)	2.1E-02		2	2
AMW-61	T	7/1/2006	TRICHLOROETHYLENE (TCE)	4.3E-02		1	1
AMW-61	T	7/1/2008	TRICHLOROETHYLENE (TCE)	6.5E-03		1	1
AMW-61	T	7/1/2010	TRICHLOROETHYLENE (TCE)	6.0E-03		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** CPU-12  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

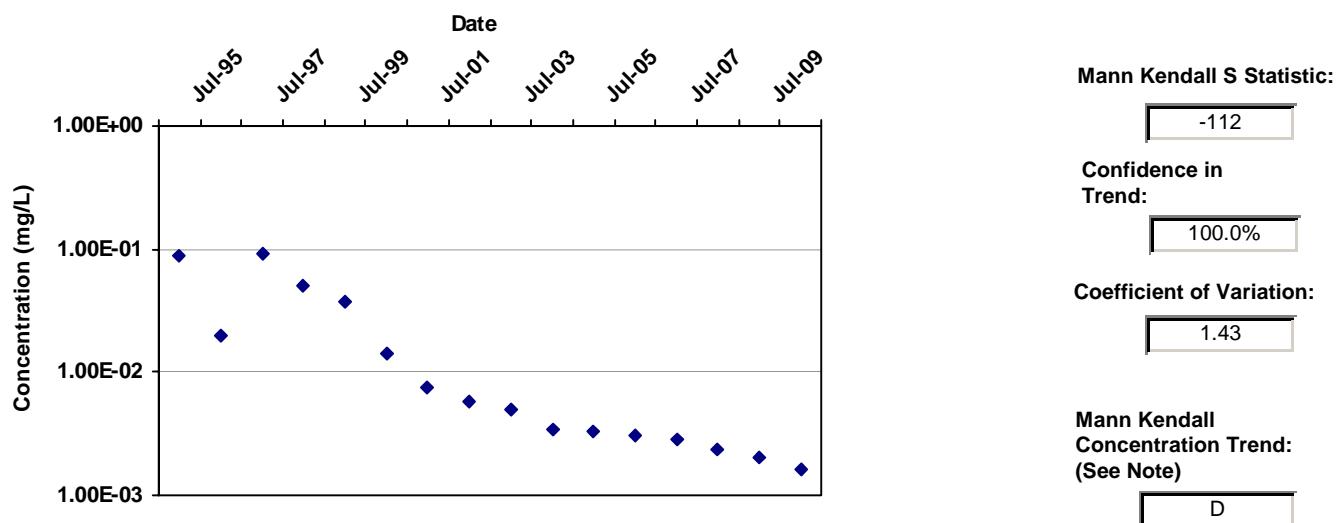
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
CPU-12	T	7/1/1995	TRICHLOROETHYLENE (TCE)	3.9E-03		2	1
CPU-12	T	7/1/1996	TRICHLOROETHYLENE (TCE)	2.2E-03		2	1
CPU-12	T	7/1/1997	TRICHLOROETHYLENE (TCE)	5.7E-03		2	2
CPU-12	T	7/1/1998	TRICHLOROETHYLENE (TCE)	2.2E-03		2	2
CPU-12	T	7/1/1999	TRICHLOROETHYLENE (TCE)	3.2E-03		2	2
CPU-12	T	7/1/2000	TRICHLOROETHYLENE (TCE)	4.8E-03		2	2
CPU-12	T	7/1/2001	TRICHLOROETHYLENE (TCE)	7.1E-03		2	2
CPU-12	T	7/1/2002	TRICHLOROETHYLENE (TCE)	1.1E-02		2	2
CPU-12	T	7/1/2003	TRICHLOROETHYLENE (TCE)	6.1E-03		2	2
CPU-12	T	7/1/2004	TRICHLOROETHYLENE (TCE)	3.4E-03		2	2
CPU-12	T	7/1/2005	TRICHLOROETHYLENE (TCE)	4.1E-03		2	2
CPU-12	T	7/1/2007	TRICHLOROETHYLENE (TCE)	3.4E-03		1	1
CPU-12	T	7/1/2008	TRICHLOROETHYLENE (TCE)	4.0E-03		1	1
CPU-12	T	7/1/2009	TRICHLOROETHYLENE (TCE)	4.9E-03		1	1
CPU-12	T	7/1/2010	TRICHLOROETHYLENE (TCE)	2.8E-03		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** CPU-13  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

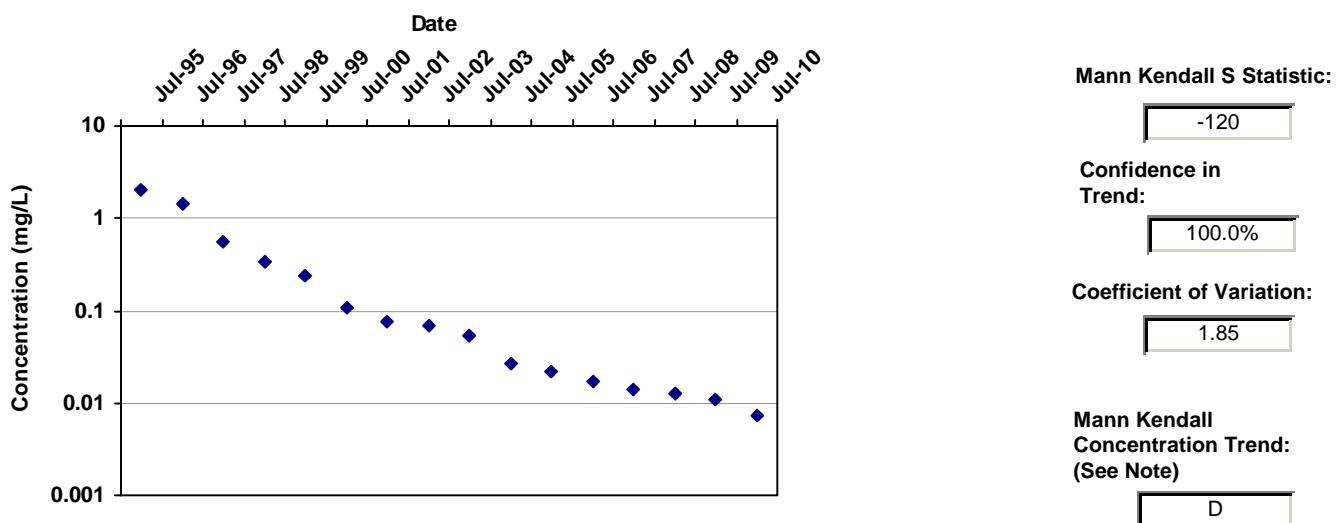
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
CPU-13	T	7/1/1995	TRICHLOROETHYLENE (TCE)	9.0E-02		11	11
CPU-13	T	7/1/1996	TRICHLOROETHYLENE (TCE)	2.0E-02		2	2
CPU-13	T	7/1/1997	TRICHLOROETHYLENE (TCE)	9.2E-02		2	2
CPU-13	T	7/1/1998	TRICHLOROETHYLENE (TCE)	5.0E-02		2	2
CPU-13	T	7/1/1999	TRICHLOROETHYLENE (TCE)	3.7E-02		2	2
CPU-13	T	7/1/2000	TRICHLOROETHYLENE (TCE)	1.4E-02		3	3
CPU-13	T	7/1/2001	TRICHLOROETHYLENE (TCE)	7.6E-03		3	3
CPU-13	T	7/1/2002	TRICHLOROETHYLENE (TCE)	5.8E-03		4	4
CPU-13	T	7/1/2003	TRICHLOROETHYLENE (TCE)	4.9E-03		3	3
CPU-13	T	7/1/2004	TRICHLOROETHYLENE (TCE)	3.4E-03		2	2
CPU-13	T	7/1/2005	TRICHLOROETHYLENE (TCE)	3.3E-03		2	2
CPU-13	T	7/1/2006	TRICHLOROETHYLENE (TCE)	3.0E-03		2	2
CPU-13	T	7/1/2007	TRICHLOROETHYLENE (TCE)	2.8E-03		2	2
CPU-13	T	7/1/2008	TRICHLOROETHYLENE (TCE)	2.4E-03		2	2
CPU-13	T	7/1/2009	TRICHLOROETHYLENE (TCE)	2.0E-03		2	2
CPU-13	T	7/1/2010	TRICHLOROETHYLENE (TCE)	1.6E-03		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-21D  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-21D	T	7/1/1995	TRICHLOROETHYLENE (TCE)	2.0E+00		11	11
MW-21D	T	7/1/1996	TRICHLOROETHYLENE (TCE)	1.4E+00		12	12
MW-21D	T	7/1/1997	TRICHLOROETHYLENE (TCE)	5.5E-01		9	9
MW-21D	T	7/1/1998	TRICHLOROETHYLENE (TCE)	3.5E-01		3	3
MW-21D	T	7/1/1999	TRICHLOROETHYLENE (TCE)	2.3E-01		2	2
MW-21D	T	7/1/2000	TRICHLOROETHYLENE (TCE)	1.1E-01		3	3
MW-21D	T	7/1/2001	TRICHLOROETHYLENE (TCE)	7.5E-02		3	3
MW-21D	T	7/1/2002	TRICHLOROETHYLENE (TCE)	6.9E-02		4	4
MW-21D	T	7/1/2003	TRICHLOROETHYLENE (TCE)	5.4E-02		3	3
MW-21D	T	7/1/2004	TRICHLOROETHYLENE (TCE)	2.7E-02		2	2
MW-21D	T	7/1/2005	TRICHLOROETHYLENE (TCE)	2.2E-02		2	2
MW-21D	T	7/1/2006	TRICHLOROETHYLENE (TCE)	1.7E-02		2	2
MW-21D	T	7/1/2007	TRICHLOROETHYLENE (TCE)	1.4E-02		2	2
MW-21D	T	7/1/2008	TRICHLOROETHYLENE (TCE)	1.2E-02		2	2
MW-21D	T	7/1/2009	TRICHLOROETHYLENE (TCE)	1.1E-02		2	2
MW-21D	T	7/1/2010	TRICHLOROETHYLENE (TCE)	7.1E-03		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-22D

**Well Type:** T

**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010

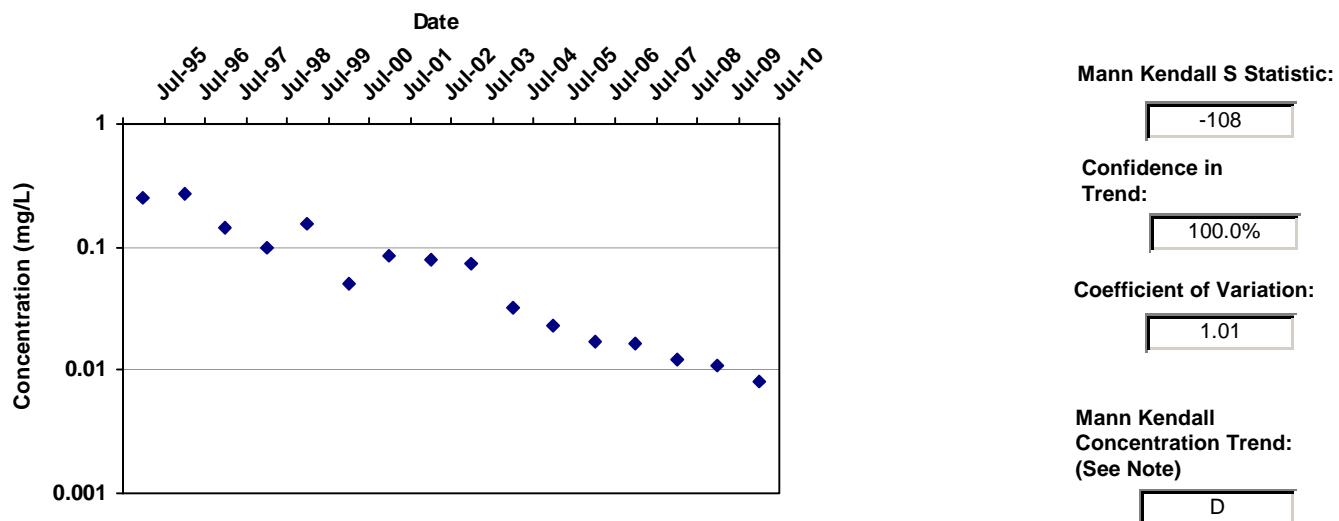
**Consolidation Period:** Yearly

**Consolidation Type:** Geometric Mean

**Duplicate Consolidation:** Maximum

**ND Values:** 1/2 Detection Limit

**J Flag Values :** Actual Value



## Data Table:

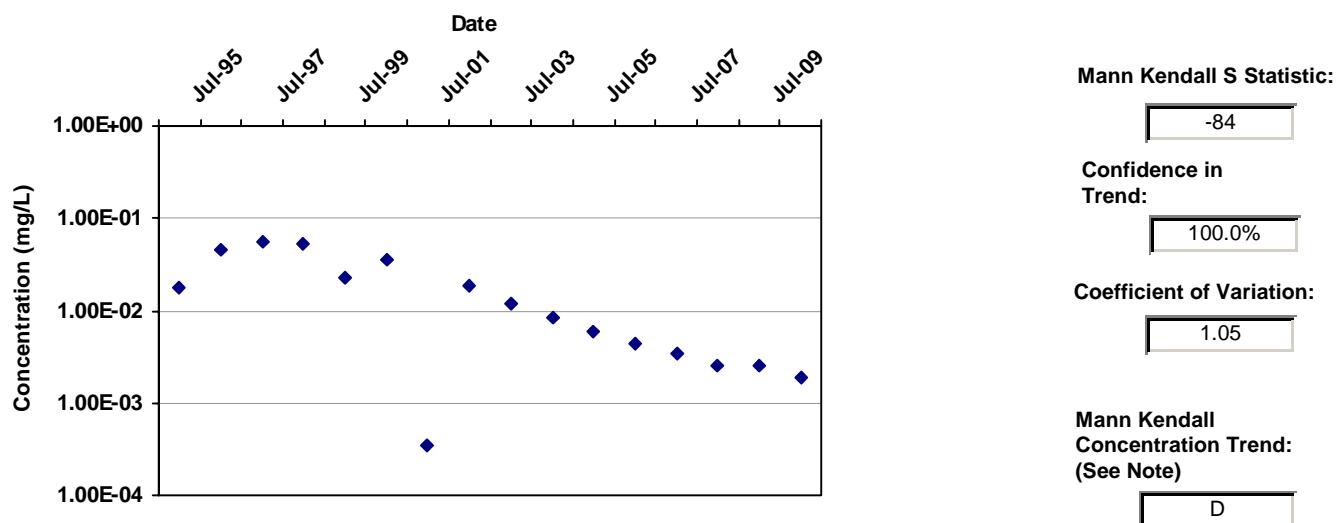
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-22D	T	7/1/1995	TRICHLOROETHYLENE (TCE)	2.5E-01		11	11
MW-22D	T	7/1/1996	TRICHLOROETHYLENE (TCE)	2.7E-01		11	11
MW-22D	T	7/1/1997	TRICHLOROETHYLENE (TCE)	1.4E-01		9	9
MW-22D	T	7/1/1998	TRICHLOROETHYLENE (TCE)	9.9E-02		3	3
MW-22D	T	7/1/1999	TRICHLOROETHYLENE (TCE)	1.6E-01		2	2
MW-22D	T	7/1/2000	TRICHLOROETHYLENE (TCE)	5.1E-02		3	3
MW-22D	T	7/1/2001	TRICHLOROETHYLENE (TCE)	8.4E-02		3	3
MW-22D	T	7/1/2002	TRICHLOROETHYLENE (TCE)	7.8E-02		3	3
MW-22D	T	7/1/2003	TRICHLOROETHYLENE (TCE)	7.3E-02		3	3
MW-22D	T	7/1/2004	TRICHLOROETHYLENE (TCE)	3.2E-02		2	2
MW-22D	T	7/1/2005	TRICHLOROETHYLENE (TCE)	2.3E-02		2	2
MW-22D	T	7/1/2006	TRICHLOROETHYLENE (TCE)	1.7E-02		2	2
MW-22D	T	7/1/2007	TRICHLOROETHYLENE (TCE)	1.6E-02		2	2
MW-22D	T	7/1/2008	TRICHLOROETHYLENE (TCE)	1.2E-02		2	2
MW-22D	T	7/1/2009	TRICHLOROETHYLENE (TCE)	1.1E-02		2	2
MW-22D	T	7/1/2010	TRICHLOROETHYLENE (TCE)	7.9E-03		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-23D  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

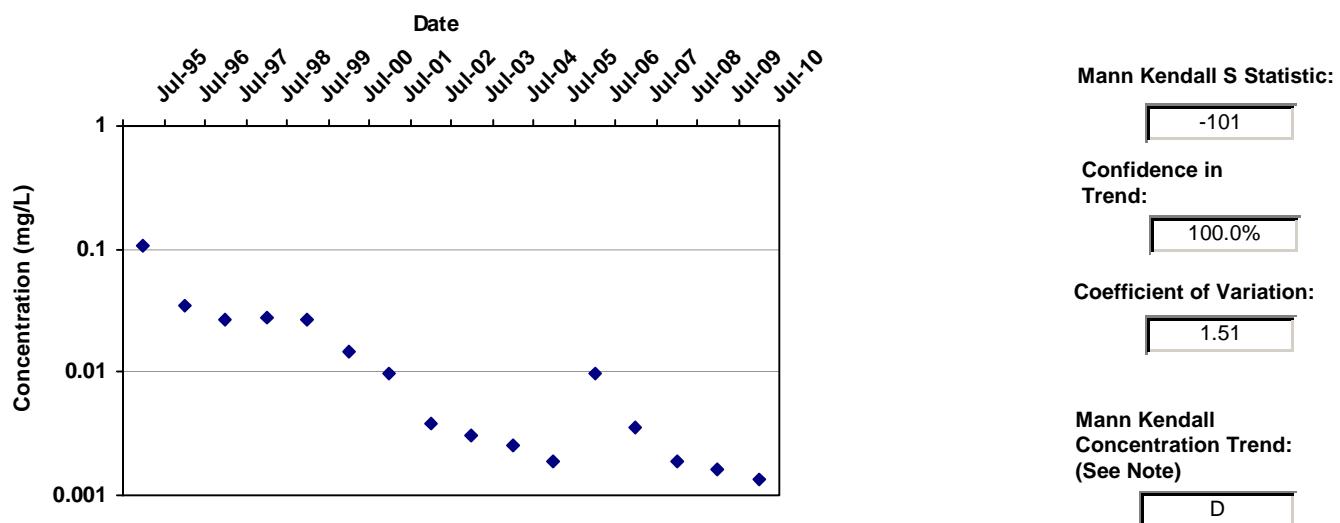
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-23D	T	7/1/1995	TRICHLOROETHYLENE (TCE)	1.7E-02		2	2
MW-23D	T	7/1/1996	TRICHLOROETHYLENE (TCE)	4.6E-02		2	2
MW-23D	T	7/1/1997	TRICHLOROETHYLENE (TCE)	5.6E-02		2	2
MW-23D	T	7/1/1998	TRICHLOROETHYLENE (TCE)	5.3E-02		2	2
MW-23D	T	7/1/1999	TRICHLOROETHYLENE (TCE)	2.3E-02		2	2
MW-23D	T	7/1/2000	TRICHLOROETHYLENE (TCE)	3.5E-02		2	2
MW-23D	T	7/1/2001	TRICHLOROETHYLENE (TCE)	3.5E-04		2	1
MW-23D	T	7/1/2002	TRICHLOROETHYLENE (TCE)	1.9E-02		2	2
MW-23D	T	7/1/2003	TRICHLOROETHYLENE (TCE)	1.2E-02		2	2
MW-23D	T	7/1/2004	TRICHLOROETHYLENE (TCE)	8.4E-03		2	2
MW-23D	T	7/1/2005	TRICHLOROETHYLENE (TCE)	5.9E-03		2	2
MW-23D	T	7/1/2006	TRICHLOROETHYLENE (TCE)	4.4E-03		1	1
MW-23D	T	7/1/2007	TRICHLOROETHYLENE (TCE)	3.5E-03		1	1
MW-23D	T	7/1/2008	TRICHLOROETHYLENE (TCE)	2.6E-03		1	1
MW-23D	T	7/1/2009	TRICHLOROETHYLENE (TCE)	2.5E-03		1	1
MW-23D	T	7/1/2010	TRICHLOROETHYLENE (TCE)	1.9E-03		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-25D  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

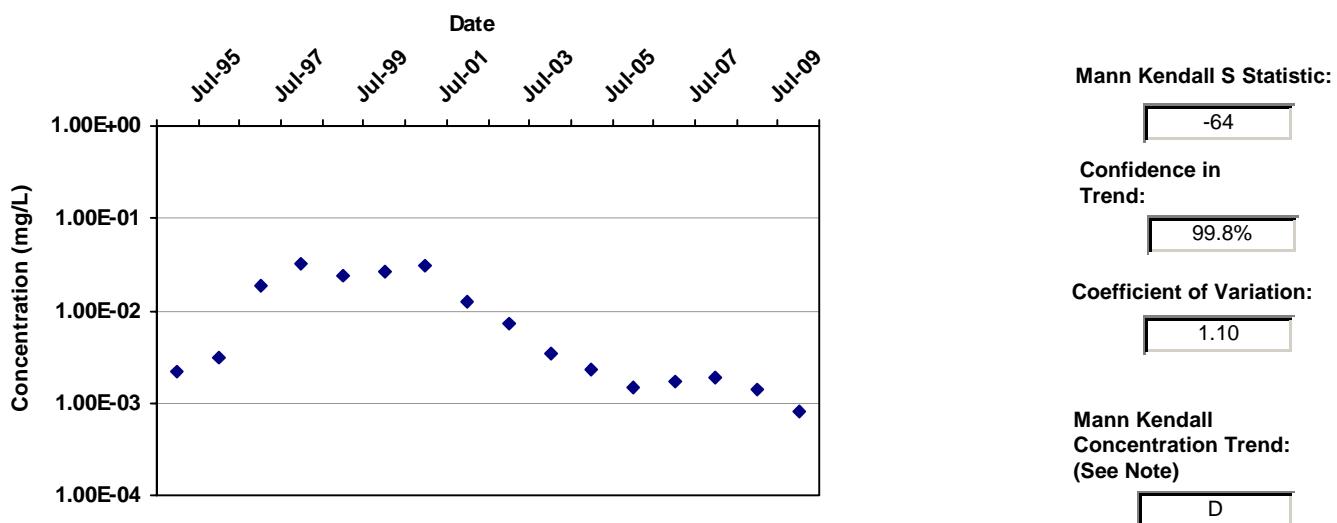
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-25D	T	7/1/1995	TRICHLOROETHYLENE (TCE)	1.1E-01		12	12
MW-25D	T	7/1/1996	TRICHLOROETHYLENE (TCE)	3.4E-02		12	12
MW-25D	T	7/1/1997	TRICHLOROETHYLENE (TCE)	2.7E-02		9	9
MW-25D	T	7/1/1998	TRICHLOROETHYLENE (TCE)	2.8E-02		3	3
MW-25D	T	7/1/1999	TRICHLOROETHYLENE (TCE)	2.7E-02		2	2
MW-25D	T	7/1/2000	TRICHLOROETHYLENE (TCE)	1.5E-02		3	3
MW-25D	T	7/1/2001	TRICHLOROETHYLENE (TCE)	9.7E-03		3	3
MW-25D	T	7/1/2002	TRICHLOROETHYLENE (TCE)	3.8E-03		4	4
MW-25D	T	7/1/2003	TRICHLOROETHYLENE (TCE)	3.1E-03		3	3
MW-25D	T	7/1/2004	TRICHLOROETHYLENE (TCE)	2.6E-03		2	2
MW-25D	T	7/1/2005	TRICHLOROETHYLENE (TCE)	1.9E-03		1	1
MW-25D	T	7/1/2006	TRICHLOROETHYLENE (TCE)	9.9E-03		1	1
MW-25D	T	7/1/2007	TRICHLOROETHYLENE (TCE)	3.6E-03		3	3
MW-25D	T	7/1/2008	TRICHLOROETHYLENE (TCE)	1.9E-03		2	2
MW-25D	T	7/1/2009	TRICHLOROETHYLENE (TCE)	1.6E-03		2	2
MW-25D	T	7/1/2010	TRICHLOROETHYLENE (TCE)	1.4E-03		3	3

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-26D  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

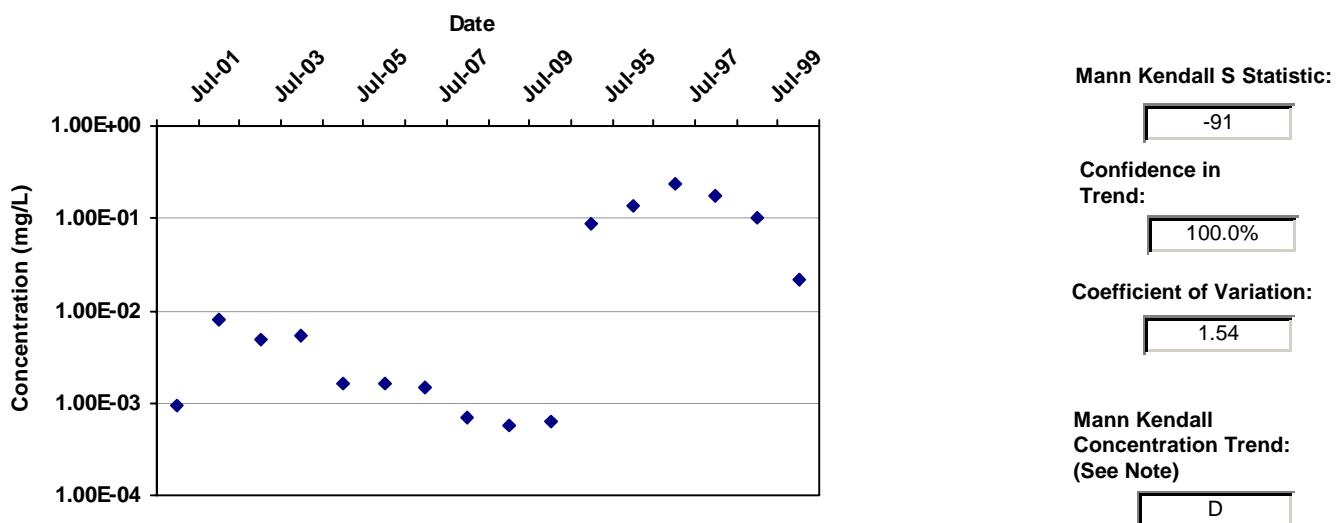
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-26D	T	7/1/1995	TRICHLOROETHYLENE (TCE)	2.2E-03		11	10
MW-26D	T	7/1/1996	TRICHLOROETHYLENE (TCE)	3.1E-03		12	12
MW-26D	T	7/1/1997	TRICHLOROETHYLENE (TCE)	1.9E-02		9	9
MW-26D	T	7/1/1998	TRICHLOROETHYLENE (TCE)	3.2E-02		3	3
MW-26D	T	7/1/1999	TRICHLOROETHYLENE (TCE)	2.4E-02		2	2
MW-26D	T	7/1/2000	TRICHLOROETHYLENE (TCE)	2.6E-02		3	3
MW-26D	T	7/1/2001	TRICHLOROETHYLENE (TCE)	3.0E-02		3	3
MW-26D	T	7/1/2002	TRICHLOROETHYLENE (TCE)	1.2E-02		4	4
MW-26D	T	7/1/2003	TRICHLOROETHYLENE (TCE)	7.4E-03		3	3
MW-26D	T	7/1/2004	TRICHLOROETHYLENE (TCE)	3.4E-03		2	2
MW-26D	T	7/1/2005	TRICHLOROETHYLENE (TCE)	2.3E-03		2	2
MW-26D	T	7/1/2006	TRICHLOROETHYLENE (TCE)	1.4E-03		2	2
MW-26D	T	7/1/2007	TRICHLOROETHYLENE (TCE)	1.7E-03		2	2
MW-26D	T	7/1/2008	TRICHLOROETHYLENE (TCE)	1.8E-03		2	2
MW-26D	T	7/1/2009	TRICHLOROETHYLENE (TCE)	1.4E-03		2	2
MW-26D	T	7/1/2010	TRICHLOROETHYLENE (TCE)	8.1E-04		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-27D  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

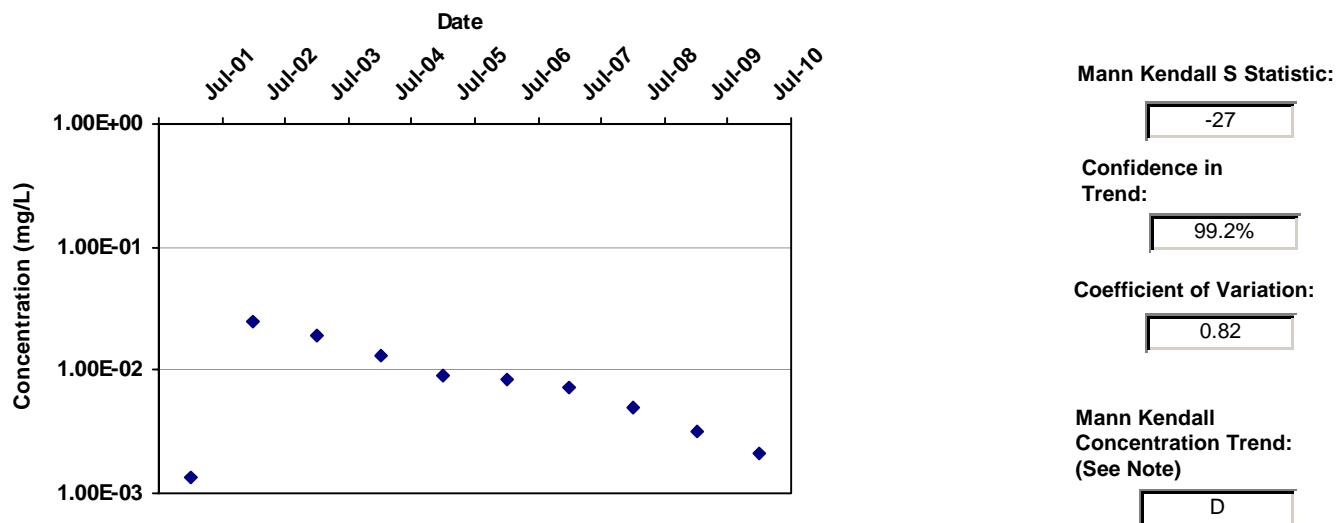
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-27D	T	7/1/1995	TRICHLOROETHYLENE (TCE)	8.9E-02		11	11
MW-27D	T	7/1/1996	TRICHLOROETHYLENE (TCE)	1.4E-01		2	2
MW-27D	T	7/1/1997	TRICHLOROETHYLENE (TCE)	2.4E-01		2	2
MW-27D	T	7/1/1998	TRICHLOROETHYLENE (TCE)	1.7E-01		2	2
MW-27D	T	7/1/1999	TRICHLOROETHYLENE (TCE)	1.0E-01		2	2
MW-27D	T	7/1/2000	TRICHLOROETHYLENE (TCE)	2.2E-02		3	3
MW-27D	T	7/1/2001	TRICHLOROETHYLENE (TCE)	9.5E-04		3	2
MW-27D	T	7/1/2002	TRICHLOROETHYLENE (TCE)	8.1E-03		4	4
MW-27D	T	7/1/2003	TRICHLOROETHYLENE (TCE)	5.0E-03		3	3
MW-27D	T	7/1/2004	TRICHLOROETHYLENE (TCE)	5.3E-03		2	2
MW-27D	T	7/1/2005	TRICHLOROETHYLENE (TCE)	1.6E-03		1	1
MW-27D	T	7/1/2006	TRICHLOROETHYLENE (TCE)	1.6E-03		1	1
MW-27D	T	7/1/2007	TRICHLOROETHYLENE (TCE)	1.5E-03		1	1
MW-27D	T	7/1/2008	TRICHLOROETHYLENE (TCE)	6.9E-04		2	2
MW-27D	T	7/1/2009	TRICHLOROETHYLENE (TCE)	5.8E-04		2	2
MW-27D	T	7/1/2010	TRICHLOROETHYLENE (TCE)	6.4E-04		3	3

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-49  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-49	T	7/1/2001	TRICHLOROETHYLENE (TCE)	1.4E-03		3	2
MW-49	T	7/1/2002	TRICHLOROETHYLENE (TCE)	2.5E-02		4	4
MW-49	T	7/1/2003	TRICHLOROETHYLENE (TCE)	1.9E-02		3	3
MW-49	T	7/1/2004	TRICHLOROETHYLENE (TCE)	1.3E-02		2	2
MW-49	T	7/1/2005	TRICHLOROETHYLENE (TCE)	9.0E-03		2	2
MW-49	T	7/1/2006	TRICHLOROETHYLENE (TCE)	8.5E-03		2	2
MW-49	T	7/1/2007	TRICHLOROETHYLENE (TCE)	7.3E-03		2	2
MW-49	T	7/1/2008	TRICHLOROETHYLENE (TCE)	4.9E-03		2	2
MW-49	T	7/1/2009	TRICHLOROETHYLENE (TCE)	3.1E-03		2	2
MW-49	T	7/1/2010	TRICHLOROETHYLENE (TCE)	2.1E-03		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

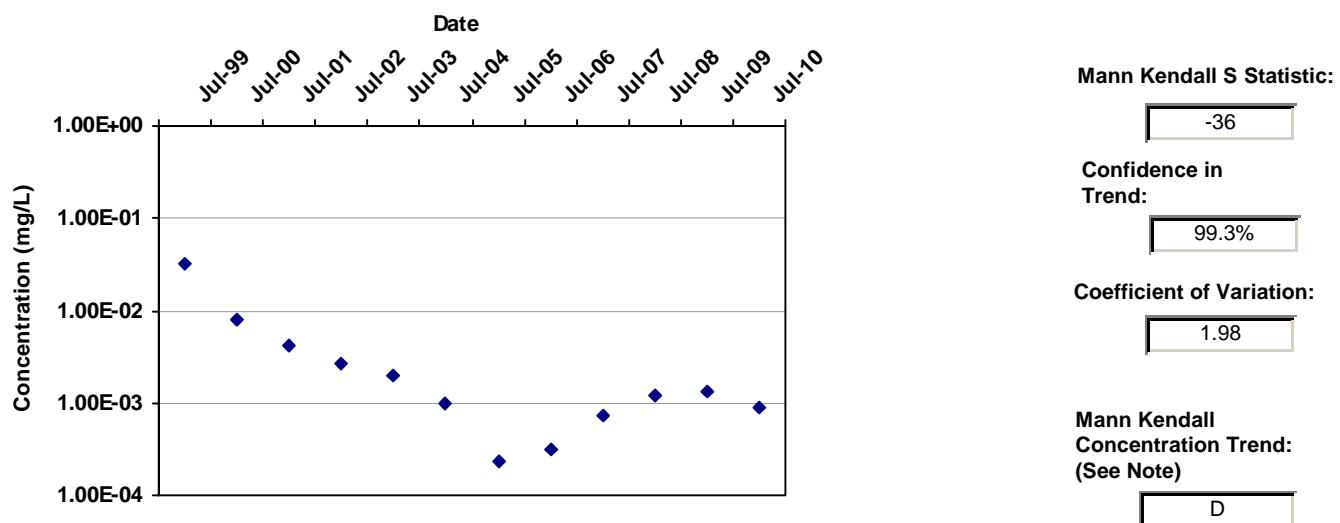
## **TOE OF PLUME**

**Other Toe Wells**

# MAROS Mann-Kendall Statistics Summary

**Well:** AMW-42  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-42	T	7/1/1999	TRICHLOROETHYLENE (TCE)	3.3E-02		3	3
AMW-42	T	7/1/2000	TRICHLOROETHYLENE (TCE)	8.0E-03		3	3
AMW-42	T	7/1/2001	TRICHLOROETHYLENE (TCE)	4.1E-03		3	3
AMW-42	T	7/1/2002	TRICHLOROETHYLENE (TCE)	2.7E-03		4	4
AMW-42	T	7/1/2003	TRICHLOROETHYLENE (TCE)	2.0E-03		3	3
AMW-42	T	7/1/2004	TRICHLOROETHYLENE (TCE)	9.9E-04		6	5
AMW-42	T	7/1/2005	TRICHLOROETHYLENE (TCE)	2.3E-04		4	1
AMW-42	T	7/1/2006	TRICHLOROETHYLENE (TCE)	3.1E-04		2	2
AMW-42	T	7/1/2007	TRICHLOROETHYLENE (TCE)	7.5E-04		2	2
AMW-42	T	7/1/2008	TRICHLOROETHYLENE (TCE)	1.2E-03		1	1
AMW-42	T	7/1/2009	TRICHLOROETHYLENE (TCE)	1.3E-03		1	1
AMW-42	T	7/1/2010	TRICHLOROETHYLENE (TCE)	8.8E-04		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

Well: AMW-63

Well Type: T

COC: TRICHLOROETHYLENE (TCE)

Time Period: 1/19/1995 to 10/20/2010

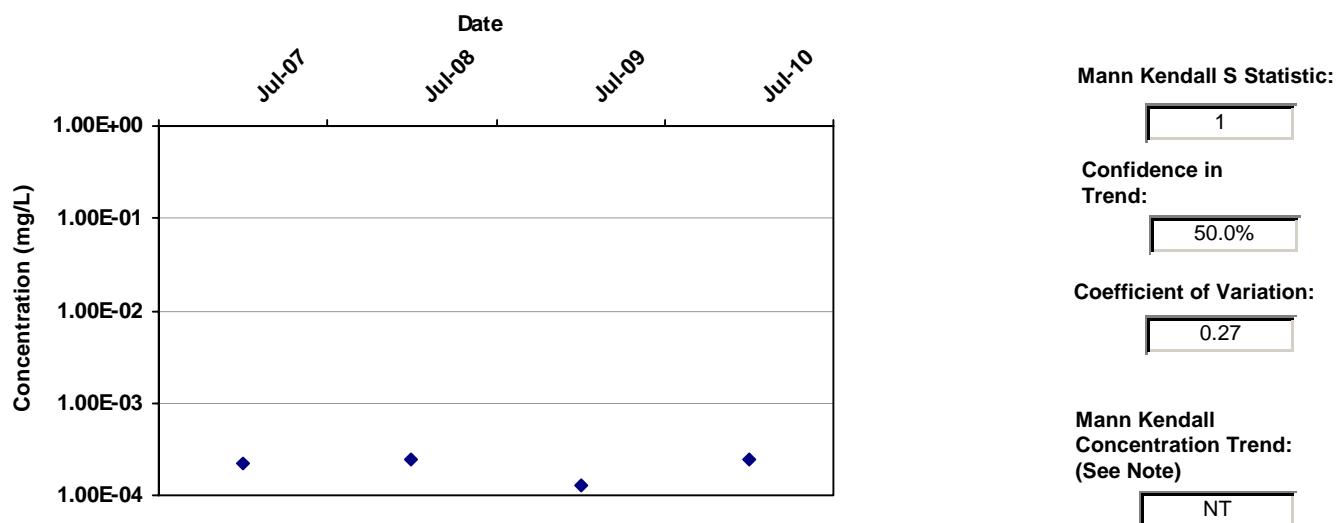
Consolidation Period: Yearly

Consolidation Type: Geometric Mean

Duplicate Consolidation: Maximum

ND Values: 1/2 Detection Limit

J Flag Values : Actual Value



## Data Table:

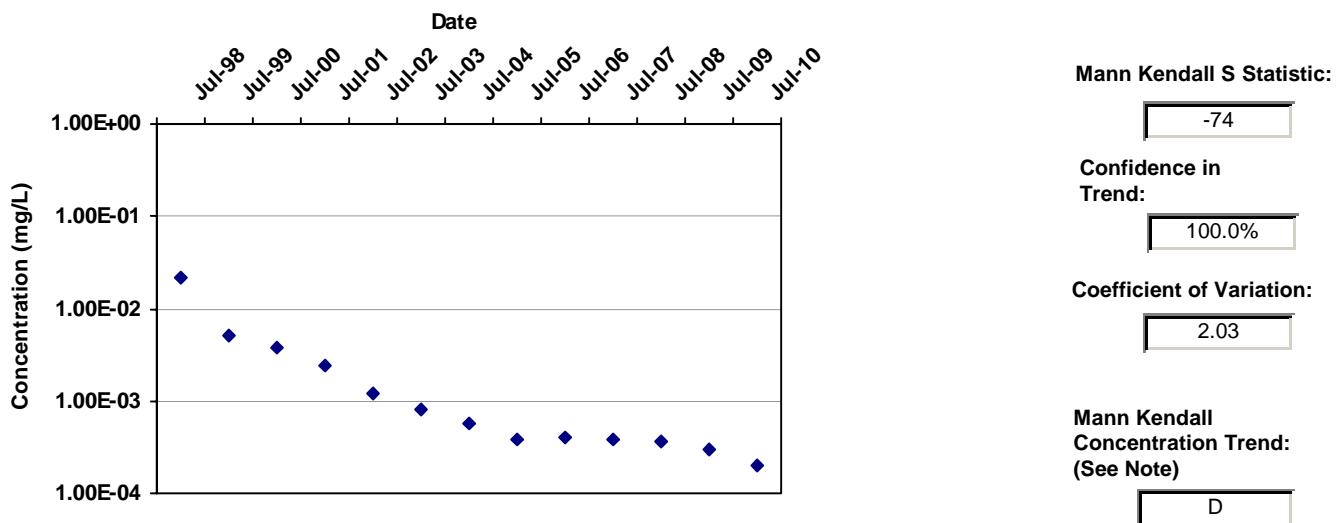
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
AMW-63	T	7/1/2007	TRICHLOROETHYLENE (TCE)	2.3E-04		4	1
AMW-63	T	7/1/2008	TRICHLOROETHYLENE (TCE)	2.5E-04	ND	2	0
AMW-63	T	7/1/2009	TRICHLOROETHYLENE (TCE)	1.3E-04		2	2
AMW-63	T	7/1/2010	TRICHLOROETHYLENE (TCE)	2.5E-04	ND	1	0

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-31  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

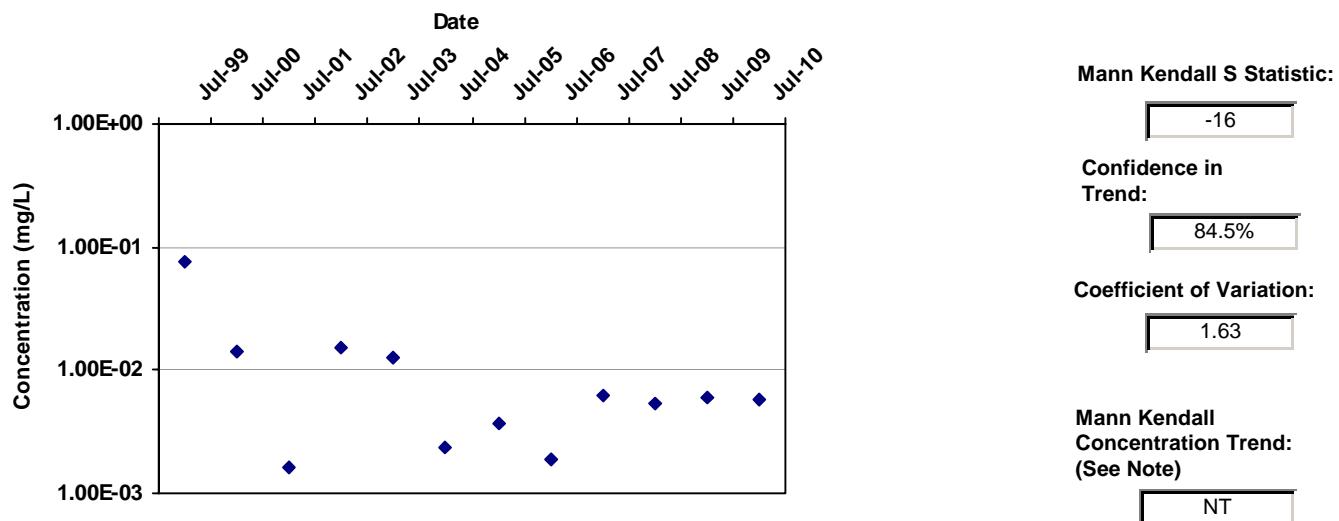
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-31	T	7/1/1998	TRICHLOROETHYLENE (TCE)	2.2E-02		2	2
MW-31	T	7/1/1999	TRICHLOROETHYLENE (TCE)	5.2E-03		2	2
MW-31	T	7/1/2000	TRICHLOROETHYLENE (TCE)	3.8E-03		3	3
MW-31	T	7/1/2001	TRICHLOROETHYLENE (TCE)	2.4E-03		2	2
MW-31	T	7/1/2002	TRICHLOROETHYLENE (TCE)	1.2E-03		3	3
MW-31	T	7/1/2003	TRICHLOROETHYLENE (TCE)	7.9E-04		3	3
MW-31	T	7/1/2004	TRICHLOROETHYLENE (TCE)	5.7E-04		2	2
MW-31	T	7/1/2005	TRICHLOROETHYLENE (TCE)	3.8E-04		1	1
MW-31	T	7/1/2006	TRICHLOROETHYLENE (TCE)	4.0E-04		1	1
MW-31	T	7/1/2007	TRICHLOROETHYLENE (TCE)	3.9E-04		1	1
MW-31	T	7/1/2008	TRICHLOROETHYLENE (TCE)	3.6E-04		1	1
MW-31	T	7/1/2009	TRICHLOROETHYLENE (TCE)	3.0E-04		1	1
MW-31	T	7/1/2010	TRICHLOROETHYLENE (TCE)	2.0E-04		1	1

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-35  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value



## Data Table:

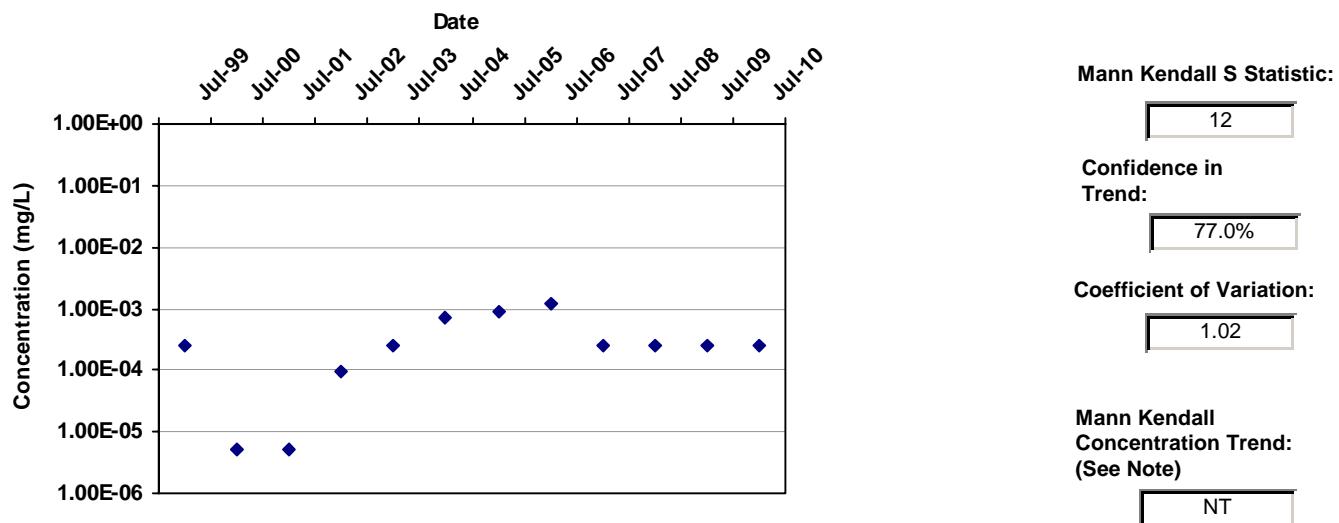
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-35	T	7/1/1999	TRICHLOROETHYLENE (TCE)	7.6E-02		2	2
MW-35	T	7/1/2000	TRICHLOROETHYLENE (TCE)	1.4E-02		3	3
MW-35	T	7/1/2001	TRICHLOROETHYLENE (TCE)	1.6E-03		3	2
MW-35	T	7/1/2002	TRICHLOROETHYLENE (TCE)	1.5E-02		6	6
MW-35	T	7/1/2003	TRICHLOROETHYLENE (TCE)	1.3E-02		3	3
MW-35	T	7/1/2004	TRICHLOROETHYLENE (TCE)	2.4E-03		5	5
MW-35	T	7/1/2005	TRICHLOROETHYLENE (TCE)	3.6E-03		4	4
MW-35	T	7/1/2006	TRICHLOROETHYLENE (TCE)	1.9E-03		2	2
MW-35	T	7/1/2007	TRICHLOROETHYLENE (TCE)	6.2E-03		2	2
MW-35	T	7/1/2008	TRICHLOROETHYLENE (TCE)	5.4E-03		2	2
MW-35	T	7/1/2009	TRICHLOROETHYLENE (TCE)	6.1E-03		2	2
MW-35	T	7/1/2010	TRICHLOROETHYLENE (TCE)	5.8E-03		2	2

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

# MAROS Mann-Kendall Statistics Summary

**Well:** MW-41  
**Well Type:** T  
**COC:** TRICHLOROETHYLENE (TCE)

**Time Period:** 1/19/1995    to    10/20/2010  
**Consolidation Period:** Yearly  
**Consolidation Type:** Geometric Mean  
**Duplicate Consolidation:** Maximum  
**ND Values:** 1/2 Detection Limit  
**J Flag Values :** Actual Value

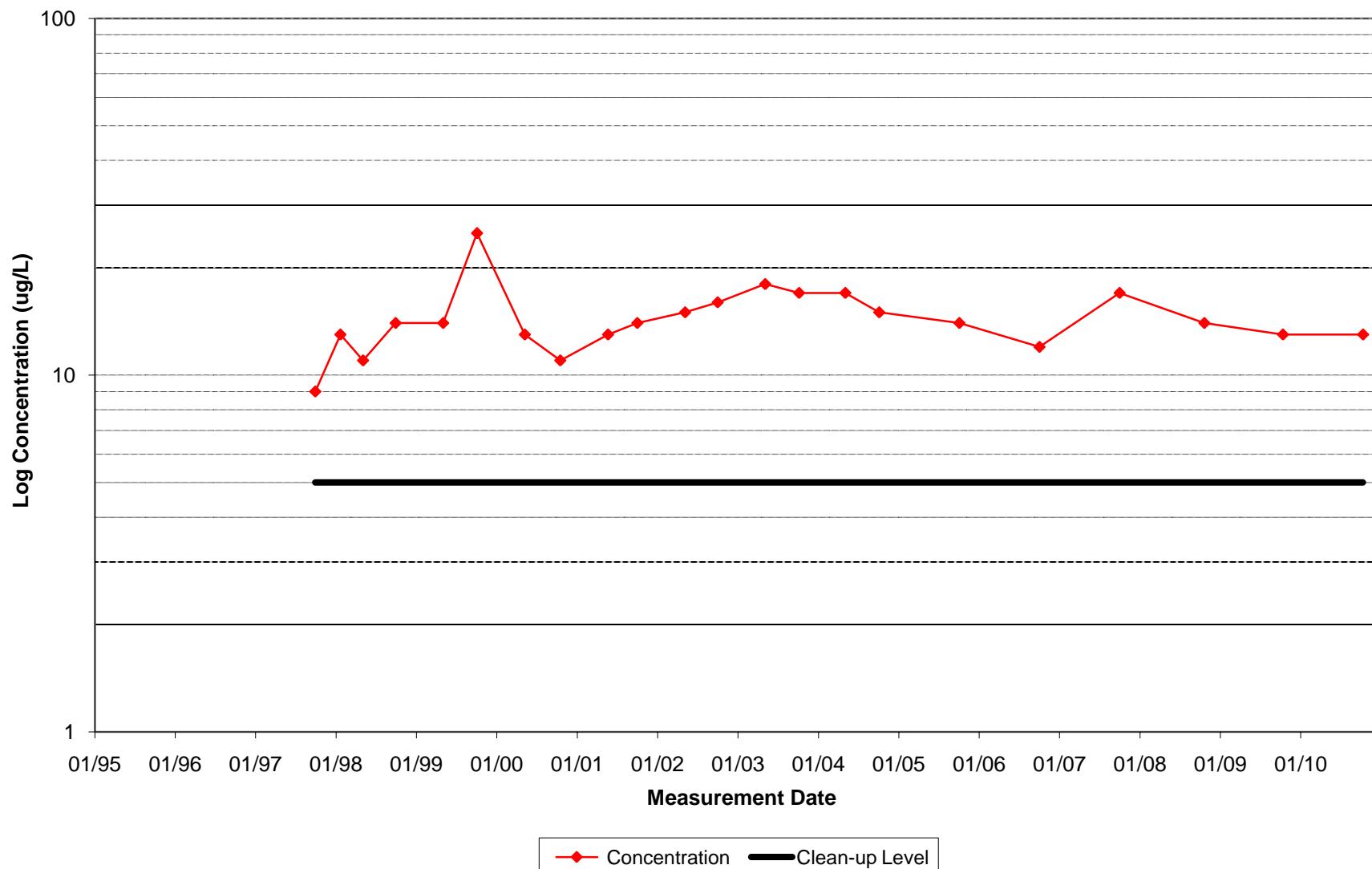


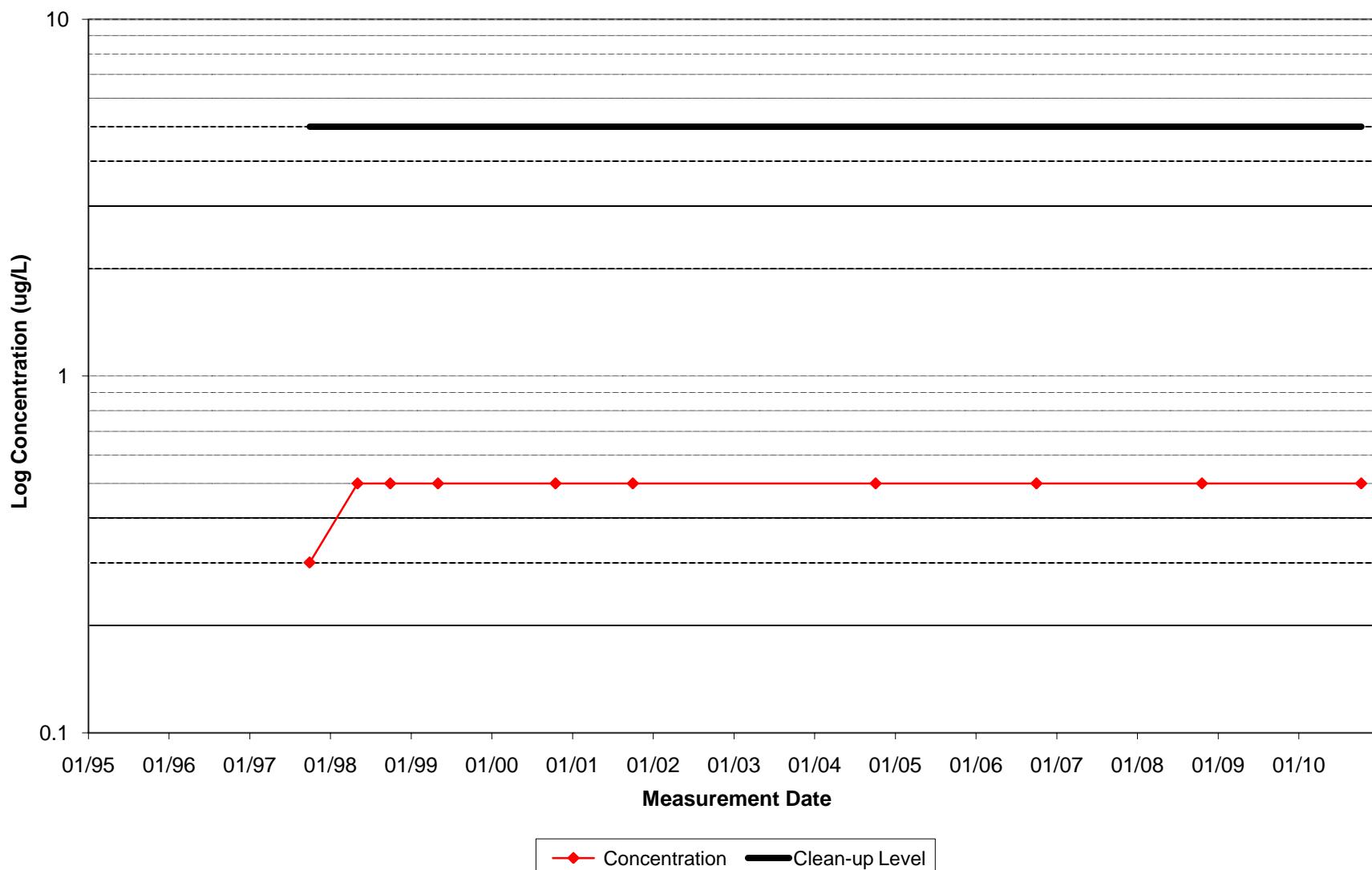
## Data Table:

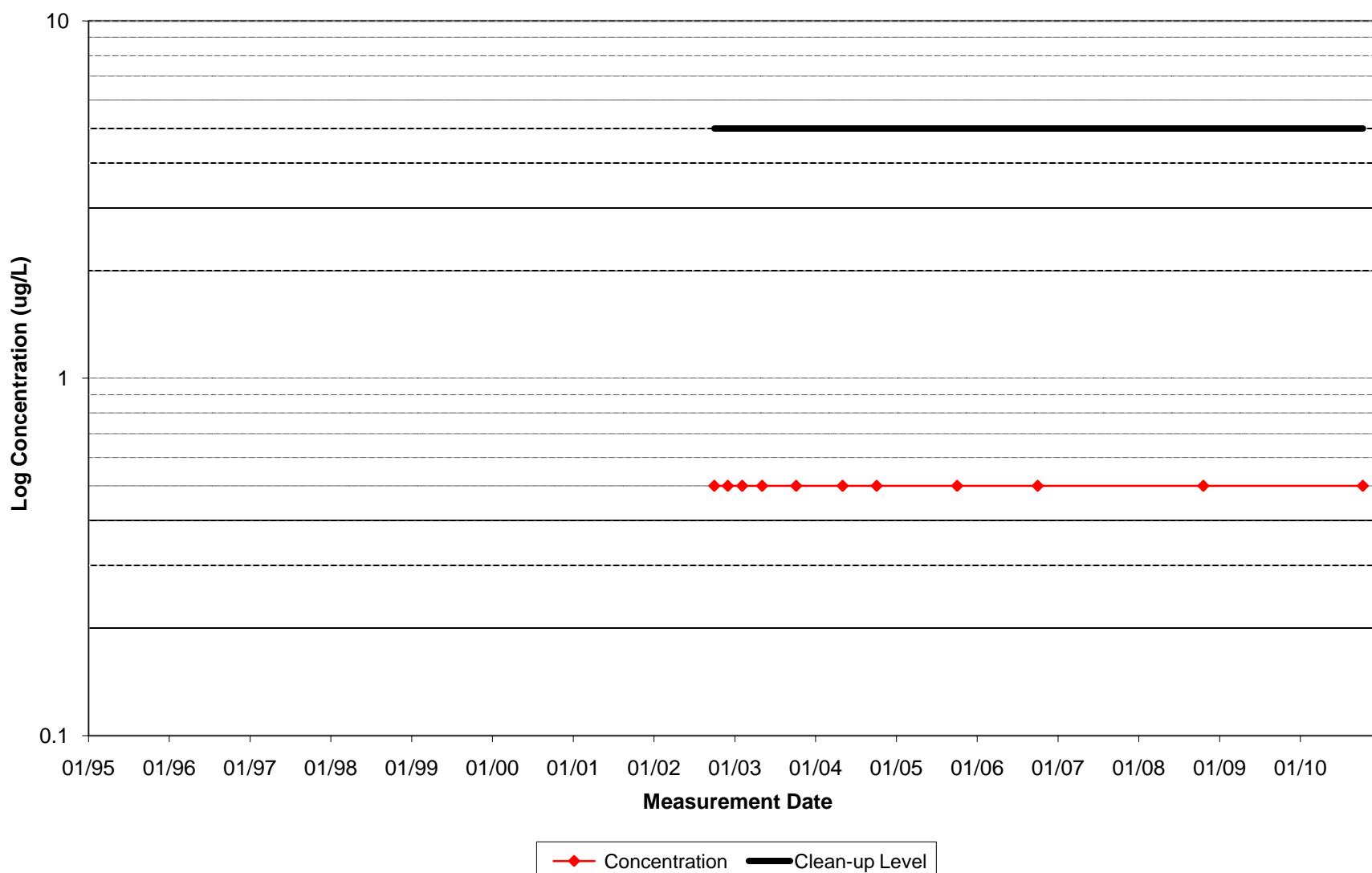
Well	Well Type	Effective Date	Constituent	Result (mg/L)	Flag	Number of Samples	Number of Detects
MW-41	T	7/1/1999	TRICHLOROETHYLENE (TCE)	2.5E-04	ND	3	0
MW-41	T	7/1/2000	TRICHLOROETHYLENE (TCE)	5.0E-06	ND	3	0
MW-41	T	7/1/2001	TRICHLOROETHYLENE (TCE)	5.0E-06	ND	3	0
MW-41	T	7/1/2002	TRICHLOROETHYLENE (TCE)	9.4E-05	ND	4	0
MW-41	T	7/1/2003	TRICHLOROETHYLENE (TCE)	2.5E-04	ND	3	0
MW-41	T	7/1/2004	TRICHLOROETHYLENE (TCE)	7.1E-04		6	2
MW-41	T	7/1/2005	TRICHLOROETHYLENE (TCE)	8.7E-04		5	4
MW-41	T	7/1/2006	TRICHLOROETHYLENE (TCE)	1.2E-03		2	1
MW-41	T	7/1/2007	TRICHLOROETHYLENE (TCE)	2.5E-04	ND	4	0
MW-41	T	7/1/2008	TRICHLOROETHYLENE (TCE)	2.5E-04	ND	2	0
MW-41	T	7/1/2009	TRICHLOROETHYLENE (TCE)	2.5E-04	ND	2	0
MW-41	T	7/1/2010	TRICHLOROETHYLENE (TCE)	2.5E-04	ND	1	0

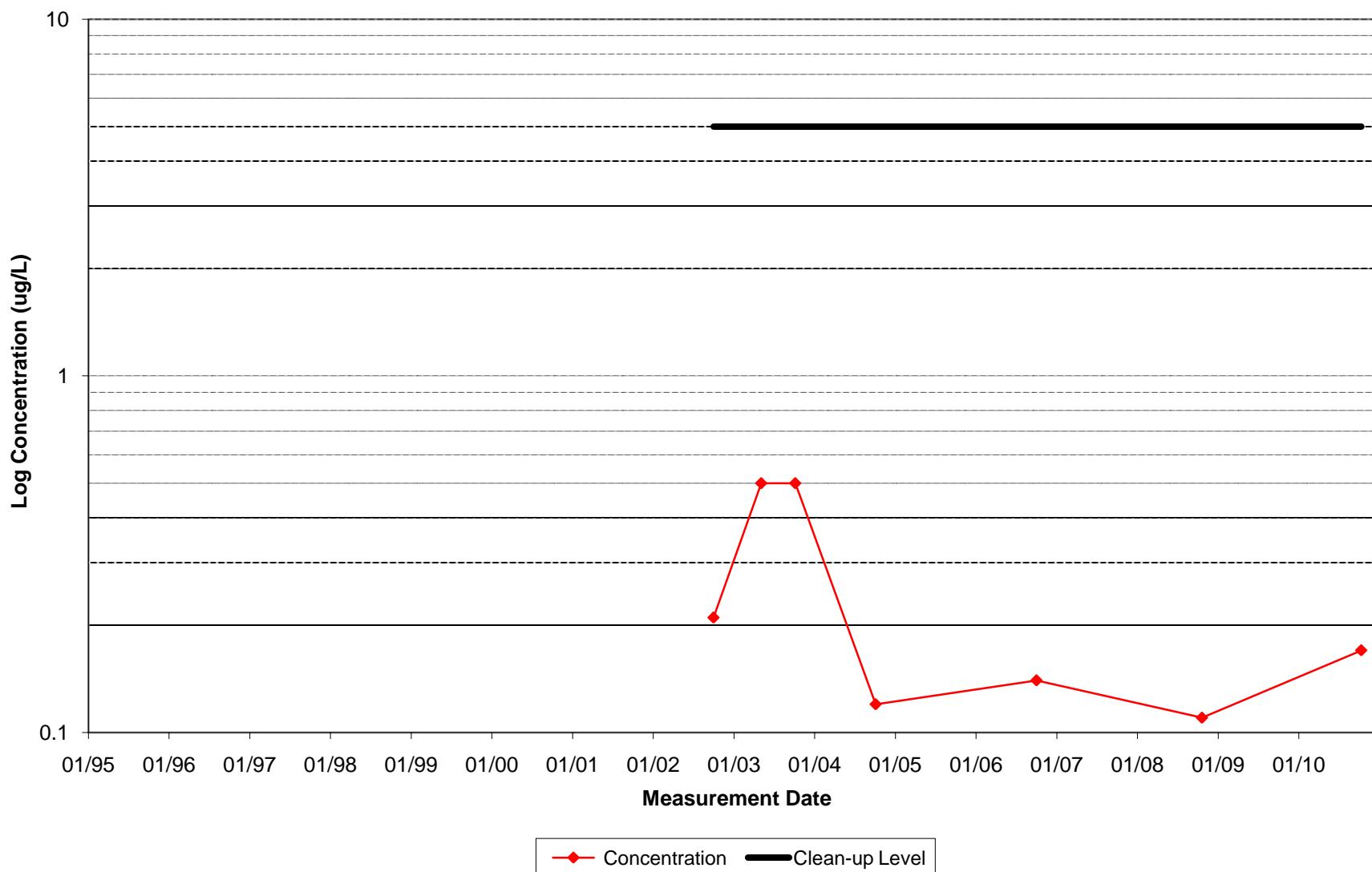
Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect

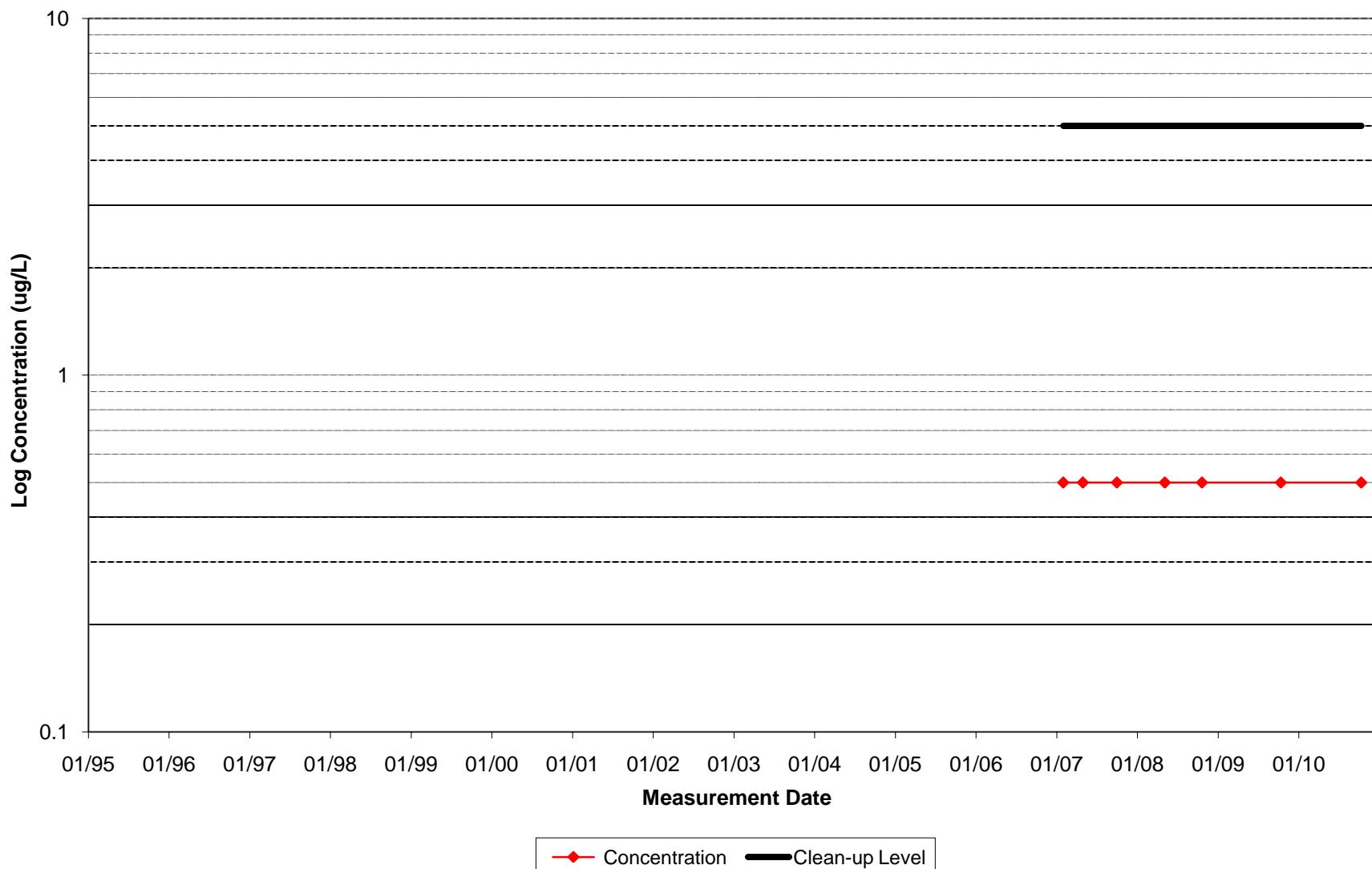
# **TROUTDALE WELLS**

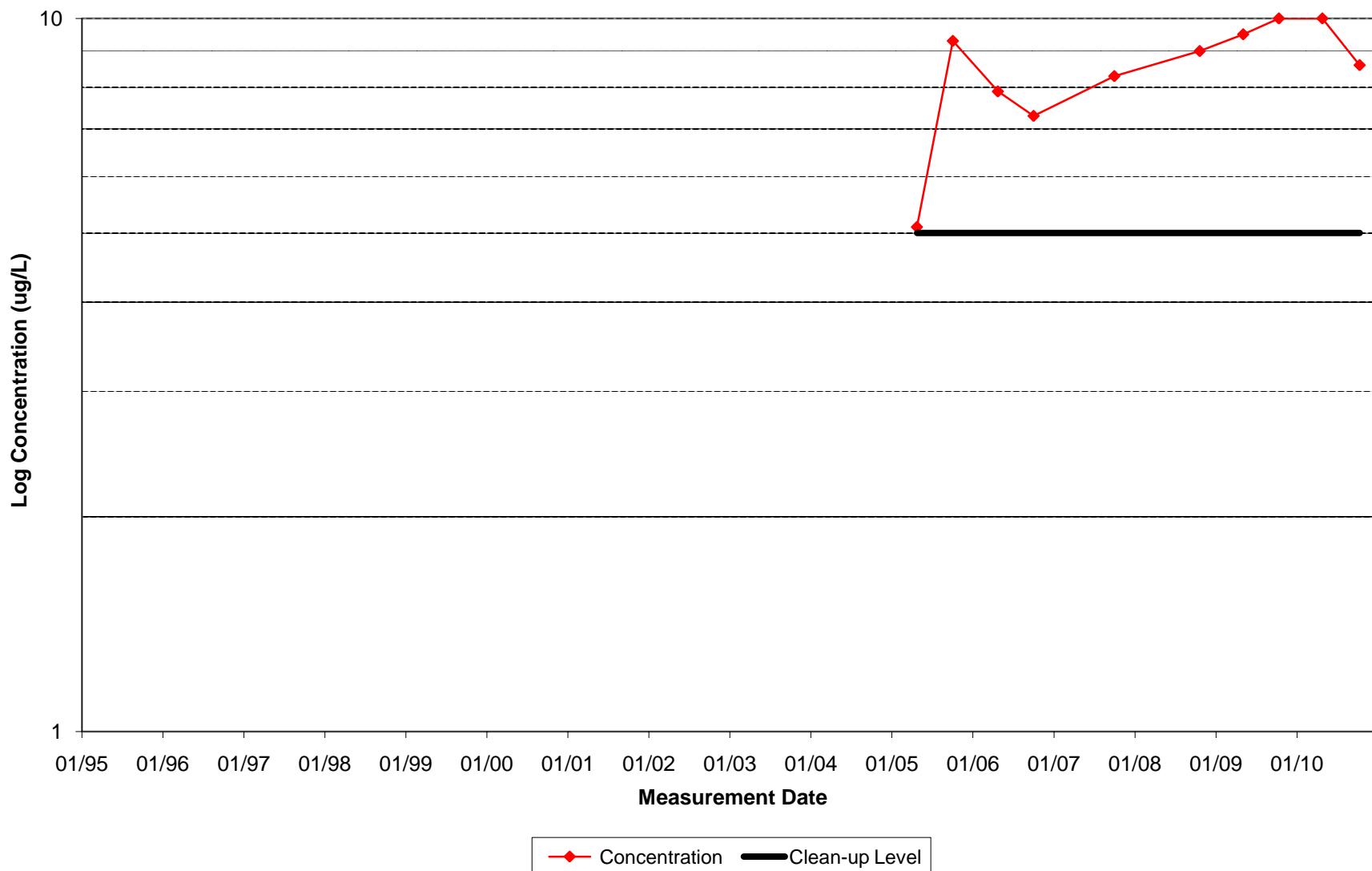
**AMW-24 - TCE (ug/L)**

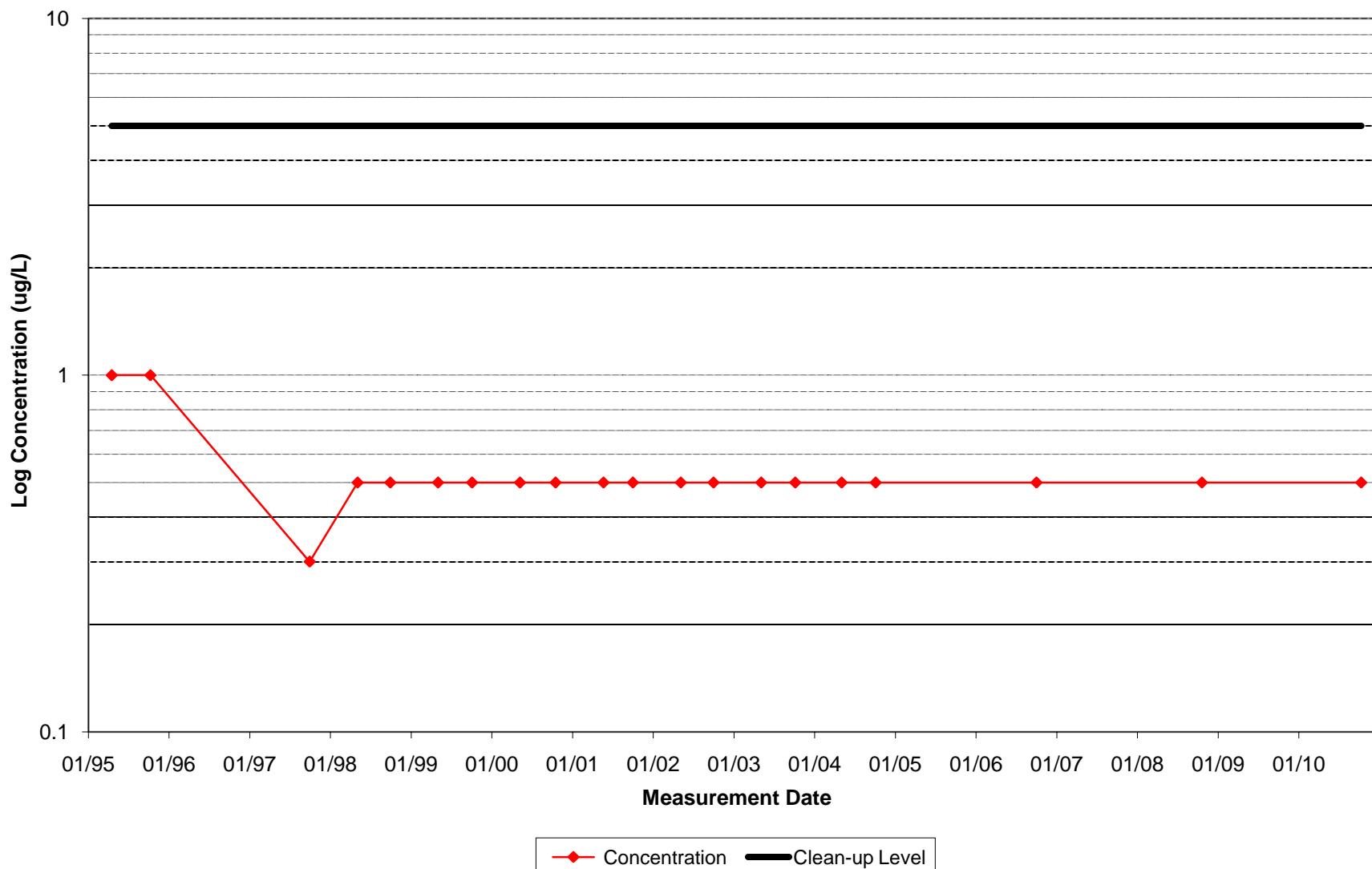
**AMW-25 - TCE (ug/L)**

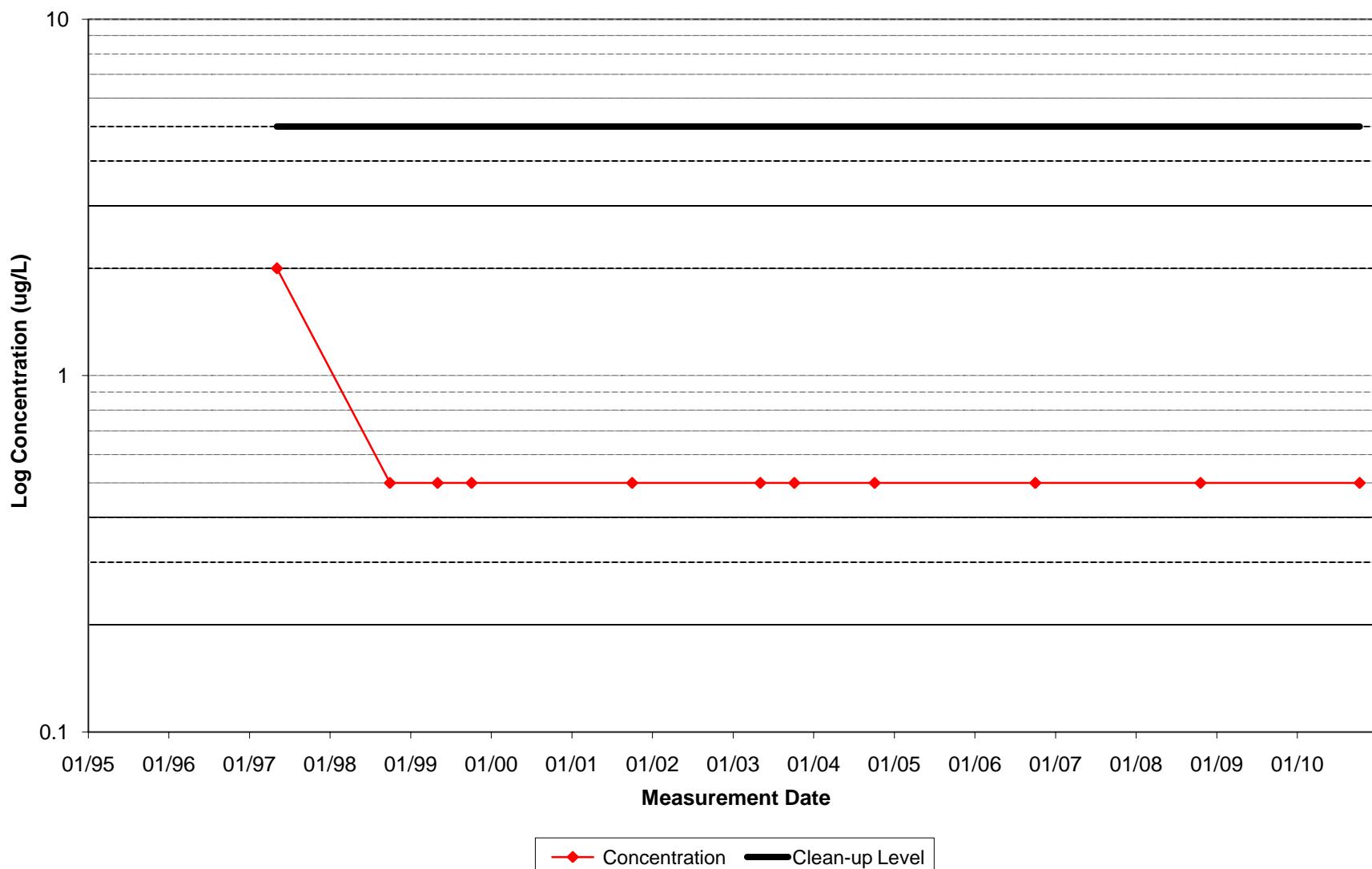
**AMW-50 - TCE (ug/L)**

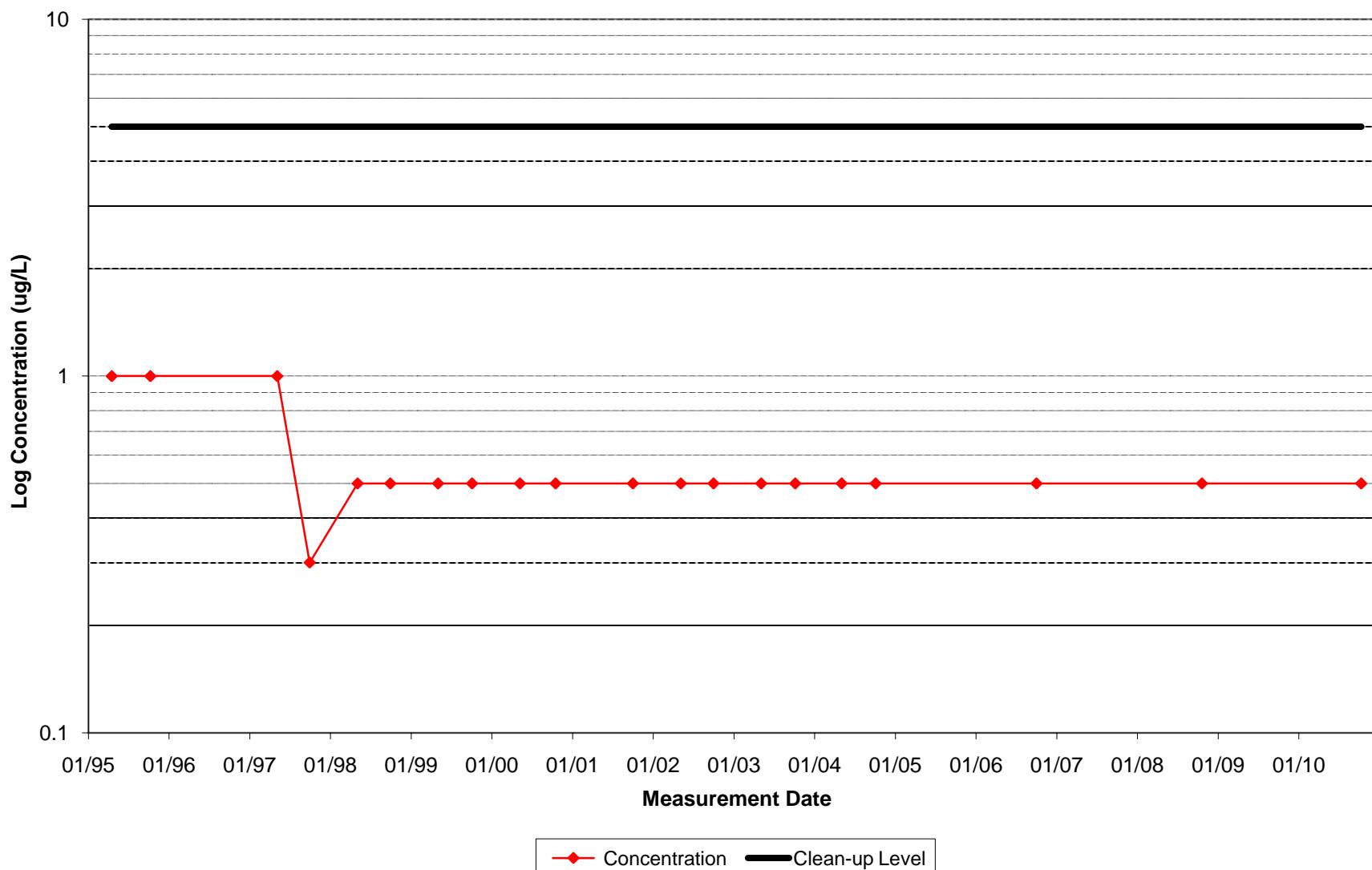
**AMW-51 - TCE (ug/L)**

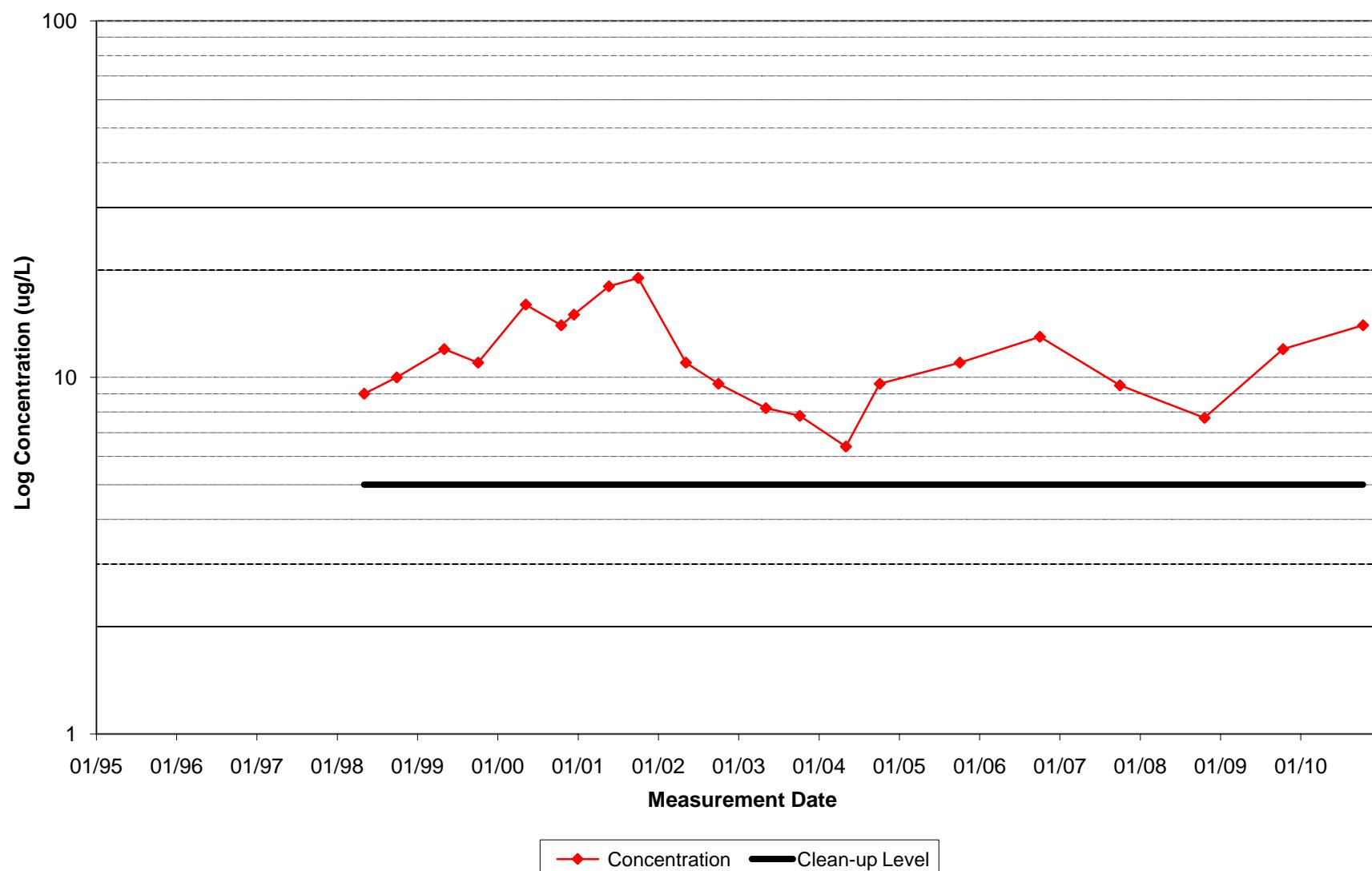
**AMW-62 - TCE (ug/L)**

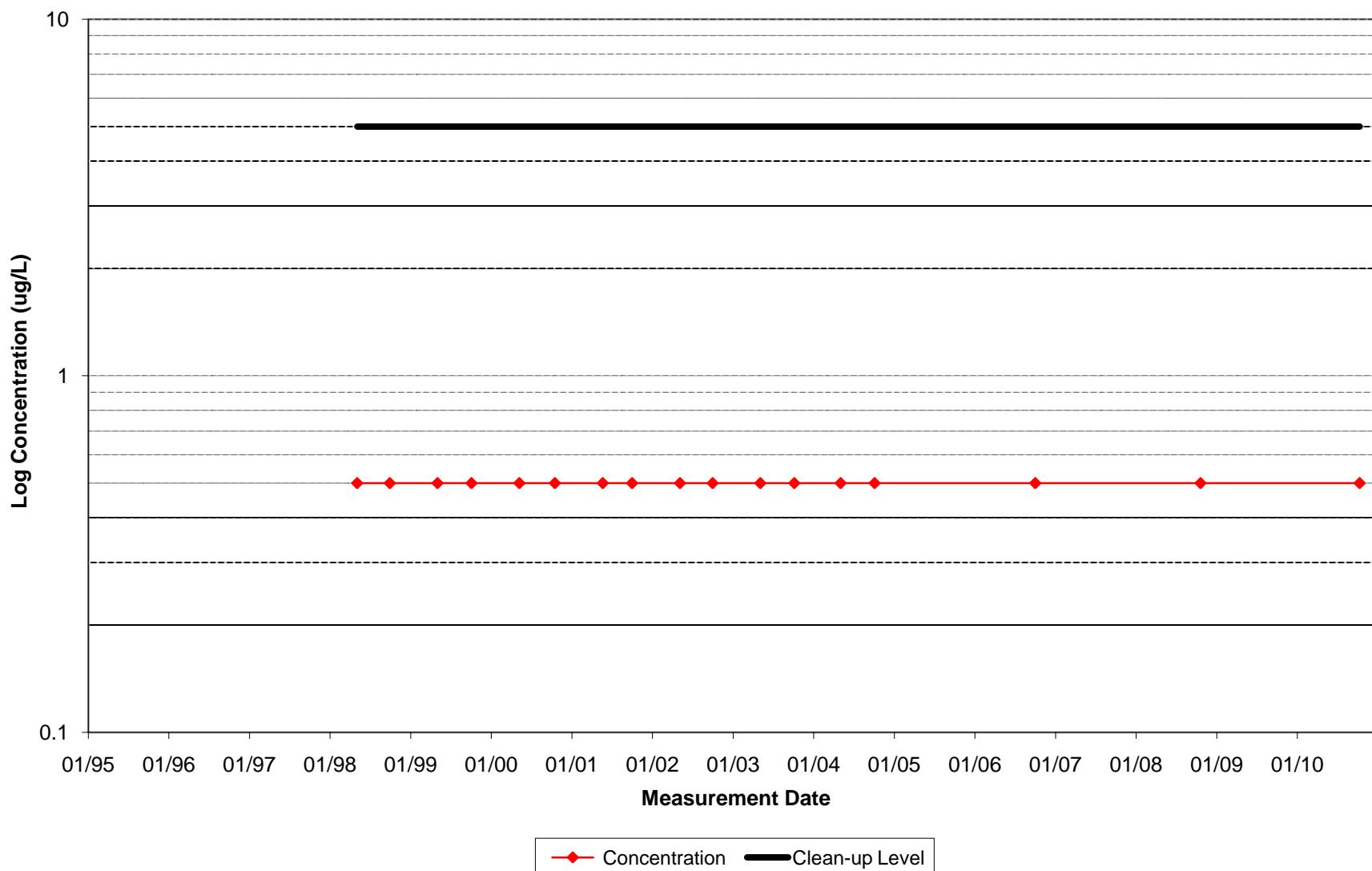
**BENNETT - TCE (ug/L)**

**CPU-2 - TCE (ug/L)**

**CPU-3D - TCE (ug/L)**

**CPU-10 - TCE (ug/L)**

**MW-33 - TCE (ug/L)**

**MW-34 - TCE (ug/L)**

**APPENDIX C**

**WELL EVALUATION TABLES  
AND  
ADDITIONAL MAROS OUTPUTS**

## **APPENDIX C-1**

### **TABLES**

TABLE C-1. 2010 MAROS RESULTS SUMMARY

Well Name	TCE								Chromium								MAROS Recommended Sampling Frequency	
	Sample Size	MK Trend	Coefficient of Variation (COV)	Sequential T-Test Result		Cleanup Status	Conc. Statistically Below Cleanup Levels	MAROS Statistically Redundant	Sample Size	MK Trend	Coefficient of Variation (COV)	Sequential T-Test Result		Cleanup Status	Conc. Statistically Below Cleanup Levels	MAROS Statistically Redundant		
				Normal Distribution	Lognormal Distribution							Normal Distribution	Lognormal Distribution			TCE	Chromium	
<b>Upgradient Wells</b>																		
AMW-6A	8	NT	0.44	Attained	Cont Sampling	Attained	Yes		7	NT	0.45	Attained	Cont Sampling	Attained	Yes		NFS	NFS
AMW-7A	13	I	0.55	Attained	Cont Sampling	Attained	Yes		8	PD	0.21	Attained	Attained	Attained	Yes		NFS	NFS
AMW-8A	15	D	1.69	Cont Sampling	Cont Sampling	Cont Sampling	No		1	N/A	0.00	N/C	N/C	N/C	0		Annual	
AMW-10A	7	S	0.49	Attained	Cont Sampling	Attained	Yes		6	NT	0.34	Attained	Cont Sampling	Attained	Yes		NFS	NFS
AMW-11A	8	NT	0.53	Attained	Cont Sampling	Attained	Yes		7	NT	0.29	Attained	Attained	Attained	Yes		NFS	NFS
<b>TCE Source Wells</b>																		
AMW-1A	16	D	1.50	Cont Sampling	Cont Sampling	Cont Sampling	No										Annual	
AMW-1B	12	D	2.82	Cont Sampling	Cont Sampling	Cont Sampling	No										Annual	
AMW-2A	16	D	1.16	Cont Sampling	Cont Sampling	Cont Sampling	No										Annual	
AMW-2B	12	NT	1.87	Cont Sampling	Cont Sampling	Cont Sampling	No										Annual	
AMW-3A	16	D	0.96	Cont Sampling	Cont Sampling	Cont Sampling	No										Annual	
<b>AMW-12A</b>	<b>16</b>	<b>D</b>	<b>1.48</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>										<b>Annual</b>	
AMW-13A	16	NT	1.95	Cont Sampling	Cont Sampling	Cont Sampling	No										Annual	
AMW-19A	14	D	1.34	Cont Sampling	Cont Sampling	Cont Sampling	No										Annual	
AMW-26	14	D	1.40	Cont Sampling	Cont Sampling	Cont Sampling	No										Annual	
AMW-52A	8	D	0.80	Cont Sampling	Cont Sampling	Cont Sampling	No										Annual	
AMW-53A	8	PD	1.73	Cont Sampling	Cont Sampling	Cont Sampling	No										Annual	
AMW-54A	8	PD	1.35	Cont Sampling	Cont Sampling	Cont Sampling	No										Annual	
AMW-55A	7	NT	1.56	Cont Sampling	Cont Sampling	Cont Sampling	No										Annual	
AMW-56A	8	D	2.42	Cont Sampling	Cont Sampling	Cont Sampling	No										Annual	
<b>MW-1A</b>	<b>16</b>	<b>D</b>	<b>0.90</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>12</b>	<b>NT</b>	<b>1.69</b>	<b>Attained</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>Annual</b>	<b>Annual</b>
<b>Proximal Wells</b>																		
AMW-58	4	D	1.04	Cont Sampling	Cont Sampling	Cont Sampling	No		4	S	0.54	Attained	Cont Sampling	Attained	Yes		Annual	NFS
MW-2A	13	D	0.58	Cont Sampling	Not Attained	Cont Sampling	No		15	NT	1.06	Cont Sampling	Not Attained	Not Attained	No		Annual	Annual
MW-2B	10	D	0.67	Cont Sampling	Not Attained	Cont Sampling	No		10	NT	0.68	Attained	Cont Sampling	Attained	Yes		Annual	NA
MW-3A	11	S	0.65	Attained	Cont Sampling	Attained	Yes		13	D	0.64	Cont Sampling	Not Attained	Cont Sampling	No		NA	Annual
MW-3B	9	D	0.91	Cont Sampling	Cont Sampling	Cont Sampling	No		8	PD	0.47	Attained	Cont Sampling	Attained	Yes		Annual	NA
MW-4A	10	NT	2.00	Cont Sampling	Cont Sampling	Cont Sampling	No		11	S	0.87	Cont Sampling	Not Attained	Cont Sampling	No		Annual	Annual
MW-4B	8	NT	2.37	Cont Sampling	Cont Sampling	Cont Sampling	No		9	D	0.79	Cont Sampling	Not Attained	Cont Sampling	No		Annual	Annual
MW-4BShed	8	D	1.43	Cont Sampling	Cont Sampling	Cont Sampling	No		9	D	1.45	Cont Sampling	Cont Sampling	Cont Sampling	No		Annual	Annual
MW-6A	3	N/A	0.00	N/C	N/C	N/C	No		3	N/A	0.00	N/C	N/C	N/C	No		NA	Quarterly
<b>MW-6B</b>	<b>16</b>	<b>D</b>	<b>1.32</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>16</b>	<b>D</b>	<b>1.95</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>Annual</b>	<b>Annual</b>
MW-6C	8	PD	0.69	Cont Sampling	Cont Sampling	Cont Sampling	No		8	NT	1.50	Cont Sampling	Cont Sampling	Cont Sampling	No		Annual	NA
MW-6D	6	D	0.63	Cont Sampling	Cont Sampling	Cont Sampling	No		6	NT	0.80	Attained	Cont Sampling	Attained	Yes		Annual	NA
MW-7B	5	D	0.97	Cont Sampling	Cont Sampling	Cont Sampling	No		5	D	1.80	Cont Sampling	Cont Sampling	Cont Sampling	No		Annual	NA
MW-8B	8	D	1.77	Cont Sampling	Cont Sampling	Cont Sampling	No		7	NT	0.65	Attained	Cont Sampling	Attained	Yes		Annual	NA
MW-9B	9	D	1.44	Cont Sampling	Cont Sampling	Cont Sampling	No		8	D	1.62	Cont Sampling	Cont Sampling	Cont Sampling	No		Annual	NA
MW-9C	6	D	1.53	Cont Sampling	Cont Sampling	Cont Sampling	No		6	I	1.65	Cont Sampling	Cont Sampling	Cont Sampling	No		Annual	Annual
MW-10B	16	D	1.58	Cont Sampling	Not Attained	Not Attained	No		16	D	0.86	Cont Sampling	Not Attained	Cont Sampling	No		Annual	Annual
<b>MW-10C</b>	<b>16</b>	<b>D</b>	<b>1.64</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>16</b>	<b>D</b>	<b>1.90</b>	<b>Cont Sampling</b>	<b>Not Attained</b>	<b>Not Attained</b>	<b>No</b>		<b>Annual</b>	<b>Annual</b>
MW-12C	16	D	2.53	Cont Sampling	Cont Sampling	Cont Sampling	No		16	PD	0.58	Attained	Attained	Attained	Yes		Annual	NFS
MW-13C	16	D	0.77	Cont Sampling	Not Attained	Cont Sampling	No		16	D	0.51	Attained	Cont Sampling	Attained	Yes		Annual	NFS
<b>PW-1B</b>	<b>16</b>	<b>D</b>	<b>1.25</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>16</b>	<b>D</b>	<b>1.58</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>Annual</b>	<b>Annual</b>

TABLE C-1. 2010 MAROS RESULTS SUMMARY

Well Name	TCE							Chromium							MAROS Recommended Sampling Frequency			
	Sample Size	MK Trend	Coefficient of Variation (COV)	Sequential T-Test Result		Cleanup Status	Conc. Statistically Below Cleanup Levels	MAROS Statistically Redundant	Sample Size	MK Trend	Coefficient of Variation (COV)	Sequential T-Test Result		Cleanup Status	Conc. Statistically Below Cleanup Levels	MAROS Statistically Redundant		
				Normal Distribution	Lognormal Distribution							Normal Distribution	Lognormal Distribution					
<b>Intermediate Wells</b>																		
AMW-16	14	D	1.20	Cont Sampling	Cont Sampling	Cont Sampling	No		15	PI	0.51	Attained	Cont Sampling	Attained	Yes		Annual	NFS
AMW-17	15	D	1.66	Cont Sampling	Cont Sampling	Cont Sampling	No		14	PI	0.52	Attained	Cont Sampling	Attained	Yes		Annual	NA
AMW-18	14	I	1.74	Cont Sampling	Cont Sampling	Cont Sampling	No		11	NT	0.43	Attained	Cont Sampling	Attained	Yes		Quarterly	NA
AMW-59	6	S	0.40	Cont Sampling	Not Attained	Cont Sampling	No		5	S	0.34	Attained	Cont Sampling	Attained	Yes		Annual	NA
CPU-14	16	D	0.63	Cont Sampling	Not Attained	Cont Sampling	No		16	D	0.87	Cont Sampling	Not Attained	Cont Sampling	No		Annual	Annual
MW-14C	16	D	1.66	Cont Sampling	Cont Sampling	Cont Sampling	No		16	D	1.40	Cont Sampling	Not Attained	Not Attained	No		Annual	Annual
<b>MW-14E</b>	<b>16</b>	<b>D</b>	<b>1.63</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>16</b>	<b>D</b>	<b>2.06</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>Annual</b>	<b>Annual</b>
MW-15E	11	D	1.87	Cont Sampling	Cont Sampling	Cont Sampling	No		9	PI	0.44	Attained	Cont Sampling	Attained	Yes		Annual	NA
MW-16E	11	PI	0.78	Attained	Cont Sampling	Attained	Yes		11	NT	1.03	Attained	Attained	Attained	Yes		NFS	NFS
<b>MW-18D</b>	<b>16</b>	<b>D</b>	<b>1.48</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>16</b>	<b>D</b>	<b>1.66</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>Annual</b>	<b>Annual</b>
MW-18E	15	D	1.04	Cont Sampling	Not Attained	Not Attained	No		15	I	1.07	Attained	Cont Sampling	Cont Sampling	No		Annual	Annual
<b>MW-19D</b>	<b>16</b>	<b>D</b>	<b>1.58</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>16</b>	<b>D</b>	<b>1.84</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>Annual</b>	<b>Annual</b>
<b>MW-20D</b>	<b>16</b>	<b>D</b>	<b>1.33</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>16</b>	<b>D</b>	<b>1.83</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>Annual</b>	<b>Annual</b>
PZ-39	2	NA	NA	NA	NA	NA	NA	NA	2	NA	NA	NA	NA	NA	NA	NA	NA	NA
<b>Church of God Wells</b>																		
AMW-14	12	D	2.60	Cont Sampling	Cont Sampling	Cont Sampling	No		12	D	2.37	Cont Sampling	Cont Sampling	Cont Sampling	No		Annual	Annual
AMW-27	13	D	0.39	Cont Sampling	Not Attained	Cont Sampling	No		13	D	1.05	Cont Sampling	Cont Sampling	Cont Sampling	No		Annual	Annual
AMW-61	4	S	0.90	Cont Sampling	Cont Sampling	Cont Sampling	No		4	NT	1.16	Cont Sampling	Cont Sampling	Cont Sampling	No		Annual	Annual
CPU-12	15	NT	0.49	Cont Sampling	Cont Sampling	Cont Sampling	No		16	D	1.37	Cont Sampling	Cont Sampling	Cont Sampling	No		Annual	Annual
CPU-13	16	D	1.43	Cont Sampling	Cont Sampling	Cont Sampling	No		16	D	1.49	Cont Sampling	Cont Sampling	Cont Sampling	No		Annual	Annual
<b>MW-21D</b>	<b>16</b>	<b>D</b>	<b>1.85</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>16</b>	<b>D</b>	<b>2.31</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>Annual</b>	<b>Annual</b>
MW-22D	16	D	1.01	Cont Sampling	Not Attained	Not Attained	No		16	D	1.51	Cont Sampling	Cont Sampling	Cont Sampling	No		Annual	Annual
MW-23D	16	D	1.05	Cont Sampling	Cont Sampling	Cont Sampling	No		16	I	0.61	Attained	Cont Sampling	Attained	Yes		Annual	NFS
MW-25D	16	D	1.51	Cont Sampling	Cont Sampling	Cont Sampling	No		16	D	2.52	Cont Sampling	Cont Sampling	Cont Sampling	No		Annual	Annual
<b>MW-26D</b>	<b>16</b>	<b>D</b>	<b>1.10</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>16</b>	<b>D</b>	<b>1.25</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>Annual</b>	<b>Annual</b>
<b>MW-27D</b>	<b>16</b>	<b>D</b>	<b>1.54</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>16</b>	<b>D</b>	<b>1.98</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>Annual</b>	<b>Annual</b>
MW-49	10	D	0.82	Cont Sampling	Cont Sampling	Cont Sampling	No		10	D	1.04	Cont Sampling	Cont Sampling	Cont Sampling	No		Annual	Annual
<b>Other Toe Wells</b>																		
AMW-42	12	D	1.98	Cont Sampling	Cont Sampling	Cont Sampling	No		12	D	2.03	Cont Sampling	Cont Sampling	Cont Sampling	No		Annual	Annual
AMW-63	4	NT	0.27	Attained	Cont Sampling	Attained	Yes		4	NT	0.38	Attained	Cont Sampling	Attained	Yes		NFS	NFS
<b>MW-31</b>	<b>13</b>	<b>D</b>	<b>2.03</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>13</b>	<b>D</b>	<b>2.33</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>Annual</b>	<b>Annual</b>
MW-35	12	NT	1.63	Cont Sampling	Cont Sampling	Cont Sampling	No		12	PD	3.14	Cont Sampling	Cont Sampling	Cont Sampling	No		Annual	Annual
<b>MW-41</b>	<b>12</b>	<b>NT</b>	<b>1.02</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>12</b>	<b>NT</b>	<b>1.23</b>	<b>Attained</b>	<b>Cont Sampling</b>	<b>Cont Sampling</b>	<b>No</b>		<b>Annual</b>	<b>Annual</b>

TABLE C-1. 2010 MAROS RESULTS SUMMARY

Well Name	TCE							Chromium							MAROS Recommended Sampling Frequency														
	Sample Size	MK Trend	Coefficient of Variation (COV)	Sequential T-Test Result		Cleanup Status	Conc. Statistically Below Cleanup Levels	MAROS Statistically Redundant	Sample Size	MK Trend	Coefficient of Variation (COV)	Sequential T-Test Result		Cleanup Status	Conc. Statistically Below Cleanup Levels	MAROS Statistically Redundant													
				Normal Distribution	Lognormal Distribution							Normal Distribution	Lognormal Distribution																
<b>NOTES:</b>																													
<b>Bolded well</b>	= attainment well																												
D	= decreasing																												
I	= increasing																												
MAROS	= Monitoring and Remediation Optimization System																												
MK	= Mann-Kendall																												
N/A	= not applicable																												
N/C	= not conducted due to small sample size (<4 samples)																												
NT	= no trend																												
PD	= probably decreasing																												
PI	= probably increasing																												
S	= stable																												
TCE	= trichloroethene																												

TABLE C-2. SUMMARY OF WELLS REQUIRING NO FURTHER SAMPLING FOR TCE AND/OR CHROMIUM

Well Name	TCE					Chromium				
	Min	Max	No. of Samples	NFS Year <sup>1</sup>	NFS Rationale	Min	Max	No. of Samples	NFS Year <sup>1</sup>	NFS Rationale
<b>TCE Source Wells</b>										
RAMW-2C	U	0.90	23	2009	All results except the first sample have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
AMW-1B	U	82.20	31	2010	All results since 1999 have been below the cleanup level.				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
AMW-1C	U	73.9	24	2009	All results since 1997 (22 samples) have been below the cleanup level and MRL.				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
AMW-4A	U	0.40	12	2009	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
AMW-19B	U	0.77	17	2009	All results have been below the cleanup level and <1 ug/L. TCE is statistically below the cleanup level according to the MAROS evaluation.				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
AMW-52C	U	U	15	2009	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
AMW-53B	0.43 J	2.70	15	2009	All results have been below the cleanup level. TCE is statistically below the cleanup level according to the MAROS evaluation.				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
AMW-53C	U	0.21 J	15	2009	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
AMW-54C	U	0.36 J	15	2009	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
AMW-55C	U	0.39 J	15	2009	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
AMW-56C	U	0.44 J	23	2009	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
MW-1B	U	400	28	2009	All results have been below the cleanup level and MRL since 2000 (22 samples).				NA	Not sampled for chromium. Well is upgradient of the chromium plume.
MW-1C	U	92.0	20	2009	All results except the first sample have been below the cleanup level. Since 1997, all results have been below the MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.	U	10	6	2009	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
<b>Proximal Wells</b>										
AMW-58				NA	NA (still sampling)	U	34.7	7	2010	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-2B	2.40	29.0	14	2010	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness. TCE is currently below the cleanup level.	U	26.4	14	2009	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.

TABLE C-2. SUMMARY OF WELLS REQUIRING NO FURTHER SAMPLING FOR TCE AND/OR CHROMIUM

Table C-2, Page 2 of 4  
April 2011

Well Name	TCE					Chromium				
	Min	Max	No. of Samples	NFS Year <sup>1</sup>	NFS Rationale	Min	Max	No. of Samples	NFS Year <sup>1</sup>	NFS Rationale
MW-2C	0.36 J	40.5	8	2009	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness. TCE has been below the cleanup level since 2002 (4 samples).	U	21.4	8	2009	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-3A	U	2.40	19	2009	All results have been below the cleanup level. TCE is statistically below the cleanup level according to the MAROS evaluation.			NA		NA (still sampling)
MW-3B				NA	NA (still sampling)	5.20	23.3	11	2009	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-3C	3.80	20.4	7	2008	This well is redundant for TCE, according to the MAROS evaluation.	U	9.30	7	2008	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-4A	0.80	210	19	2010	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness.					
MW-4BShed	4.10	198	15	2010	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness.					
MW-4C	3.80	40.0	8	2009	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness. TCE has been on a decreasing trend and is currently below the cleanup level (1 sample).	61.0	248	47	2009	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness. Chromium has been on a decreasing trend and is currently below the cleanup level (1 sample).
MW-6A	U	38.1	5	2009	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness. TCE has been below the cleanup level since 1995 (4 samples) and below the detection limit since 1997.			NA		NA (still sampling)
MW-6C	0.54	66.7	10	2010	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness.	8.63	400	10	2009	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness. Chromium has been below the cleanup level since 1995 (9 samples).
MW-6D	4.30	63.5	8	2010	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness.	U	29.8	8	2009	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-7B				NA	NA (still sampling)	9.80	932	6	2009	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness. Chromium has been below the cleanup level since 1997 (4 samples).
MW-7C	0.18 J	26.5	6	2009	This well is part of a well cluster (adjacent to the MW-4 cluster) but is not the most impacted well in the cluster and therefore provides data of limited usefulness. TCE has been below the cleanup level since 1997 (4 samples).	U	174	8	2009	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness. Chromium has been below the cleanup level since 1995 (7 samples).
MW-8B				NA	NA (still sampling)	U	13.0	11	2009	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-9B				NA	NA (still sampling)	U	429	16	2009	Chromium has been below the cleanup level since 1997 (12 samples).

TABLE C-2. SUMMARY OF WELLS REQUIRING NO FURTHER SAMPLING FOR TCE AND/OR CHROMIUM

Table C-2, Page 3 of 4  
April 2011

Well Name	TCE					Chromium				
	Min	Max	No. of Samples	NFS Year <sup>1</sup>	NFS Rationale	Min	Max	No. of Samples	NFS Year <sup>1</sup>	NFS Rationale
MW-9C	3.80	2,280	9	2010	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness.	U	65.4	22	2010	This well is part of a well cluster but is not the most impacted well in the cluster and therefore provides data of limited usefulness. Chromium has never exceeded the cleanup level.
MW-12C				NA	NA (still sampling)	U	19.0	38	2010	Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-13C				NA	NA (still sampling)	27.5	122	38	2010	Chromium is statistically below the cleanup level according to the MAROS evaluation.
<b>Intermediate Wells</b>										
AMW-16				NA	NA (still sampling)	U	3.0	21	2010	Chromium is statistically below the cleanup level according to the MAROS evaluation.
AMW-17				NA	NA (still sampling)	U	4.60	19	2008	All results have been below the cleanup level and all have been below the MRL except one. Chromium is statistically below the cleanup level according to the MAROS evaluation.
AMW-18				NA	NA (still sampling)	U	2.40	14	2008	All results have been below the cleanup level and all have been below the MRL except one. Chromium is statistically below the cleanup level according to the MAROS evaluation.
AMW-59				NA	NA (still sampling)	U	7.90	8	2009	All results have been below the cleanup level and all but one have been below the MRL. Chromium is statistically below the cleanup level according to the MAROS evaluation.
AMW-60	U	0.94	3	2009	All results have been below the cleanup level and near or below the MRL. This is a silt well.	U	8.90	3	2009	All results have been below the cleanup level and near or below the MRL. This is a silt well.
MW-15E				NA	NA (still sampling)	U	18.0	13	2008	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-16E				NA	NA (still sampling)	U	16.1	19	2010	Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-17E	U	0.85 J	5	2008	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.	U	U	5	2008	All results have been below the cleanup level and the MRL. Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-18E				NA	NA (still sampling)	U	597	35	2010	With the exception of three outliers, chromium concentrations have been below the cleanup level in all samples collected since the well was installed in 1993.
PZ-39				NA	NA (still sampling)	6.7	11.0	3	2010	Chromium has never exceeded the cleanup level.
MW-40	1.2	36	6	2009	Replaced with PZ-39.	97.6	443	6	2009	Replaced with PZ-39.
<b>Church of God</b>										
AMW-61				NA	NA (still sampling)	17.3	1410	5	2010	Chromium is below the cleanup level. Due to excessive drawdown during low-flow pumping of this silt well, use of a PDB is recommended for VOC sampling only.
CPU-12				NA	NA (still sampling)	U	245	27	2010	Chromium concentrations have been below the cleanup level since 2002.
MW-23D				NA	NA (still sampling)	U	6.7	40	2010	Chromium is statistically below the cleanup level according to the MAROS evaluation.

TABLE C-2. SUMMARY OF WELLS REQUIRING NO FURTHER SAMPLING FOR TCE AND/OR CHROMIUM

Well Name	TCE					Chromium				
	Min	Max	No. of Samples	NFS Year <sup>1</sup>	NFS Rationale	Min	Max	No. of Samples	NFS Year <sup>1</sup>	NFS Rationale
<b>Other Toe Wells</b>										
AMW-63	U	0.17	9	2010	TCE is statistically below the cleanup level according to the MAROS evaluation.	U	12.4	9	2010	Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-37	U	U	28	2008	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.	U	18.0	28	2008	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-46	U	U	41	2009	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.	U	28.0	42	2009	All results have been below the cleanup level.
MW-48	U	U	38	2009	All results have been below the cleanup level and MRL except one outlier in 2001. TCE is statistically below the cleanup level according to the MAROS evaluation (outlier excluded).	U	37.8	39	2009	All results have been below the cleanup level.
<b>Sentinel Toe Wells</b>										
AMW-43	U	U	38	2009	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.	U	7.80	39	2009	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
AMW-44	U	U	40	2008	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.	U	57.8	41	2008	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
AMW-45	U	U	44	2008	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.	U	30.8	47	2008	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-30	U	U	21	2008	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.	U	5.80	24	2008	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
MW-47	U	U	32	2008	All results have been below the cleanup level and MRL. TCE is statistically below the cleanup level according to the MAROS evaluation.	U	17.0	34	2008	All results have been below the cleanup level. Chromium is statistically below the cleanup level according to the MAROS evaluation.
Notes:										
<sup>1</sup> Year = the Annual Report in which this recommendation was made.										
Data used are from 1995 to the present.										
MAROS = Monitoring and Remediation Optimization Software.										
MRL = Method reporting limit.										
NA = Not applicable.										
NFS = No further sampling.										
TCE = Trichloroethene.										
U = Undetected (below the MRL).										

TABLE C-3. WELL SAMPLING FREQUENCY CHANGES FOR 2011

Well Group	Well ID	Sampling Frequency		Reason for Change
		From	To	
TCE Source (Cr not monitored)	AMW-3A, AMW-13A, AMW-52A, AMW-54A, AMW-55A, AMW-56A	Annual	Biennial	TCE concentrations have been below the cleanup level since at least 2006.
	AMW-1B	Biennial	NFS	This well is part of a well cluster but is not at the optimal depth. TCE concentrations have been below the cleanup level since 1999.
	AMW-26	Annual	Biennial	TCE concentrations have been below the cleanup level since 2004.
Proximal	AMW-58	Biennial	NC for TCE, NFS for Cr	Chromium concentrations are statistically below the cleanup level and MAROS recommends NFS for chromium in this silt well.
	MW-2B	Every 5 years for TCE	NFS for TCE	This well is part of a well cluster but is not at the optimal depth.
	MW-4A	Every 5 years for TCE	NFS for TCE	This well is part of a well cluster but is not at the optimal depth.
	MW-4BShed	Every 5 years	NFS	This well is part of a well cluster but is not at the optimal depth.
	MW-6C	Every 5 years for TCE	NFS for TCE	This well is part of a well cluster but is not at the optimal depth.
	MW-6D	Every 5 years for TCE	NFS for TCE	This well is part of a well cluster but is not at the optimal depth.
	MW-9C	Every 5 years	NFS	This well is part of a well cluster but is not at the optimal depth. Chromium has never exceeded the cleanup level. TCE is below the cleanup level.
	MW-12C, MW-13C	Biennial for Cr	NFS for Cr	Chromium concentrations are statistically below the cleanup level and MAROS recommends NFS for chromium.
Intermediate	AMW-16	Biennial for Cr	NFS for Cr	Chromium concentrations are statistically below the cleanup level and MAROS recommends NFS for chromium.
	AMW-59	Annual for TCE	Biennial for TCE	This is a silt well with some TCE impact, but with lower concentrations than in nearby deep alluvial aquifer well MW-18E.
	MW-16E	Biennial for Cr	NFS for Cr	Chromium concentrations are statistically below the cleanup level and MAROS recommends NFS for chromium.
	MW-18E	Annual for Cr	NFS for Cr	This is a TCE hotspot well. With the exception of three outliers, chromium concentrations have been below the cleanup level in all samples collected since the well was installed in 1993.
	PZ-39	Biennial for Cr	NFS for Cr	Chromium has never exceeded the cleanup level in this TCE plume area well.
Church of God	AMW-14	Semiannual	Annual	This well was being sampled more frequently due to plans for development of this area; however, development has been delayed and the well is expected to remain in place for several more years. Additionally, TCE and chromium concentrations have decreased below the cleanup level.
	AMW-61	Biennial for Cr	NFS for Cr	Chromium is below the cleanup level in this silt well. Due to excessive drawdown during low-flow sampling, use of a PDB is recommended for VOC sampling only.
	CPU-12	Biennial for Cr	NFS for Cr	Chromium concentrations have been below the cleanup level in this well since 2002.
	MW-23D	Biennial for Cr	NFS for Cr	Chromium concentrations are statistically below the cleanup level and MAROS recommends NFS for chromium.
	MW-25D	Quarterly	Semiannual	This well was being sampled more frequently during an evaluation of pumping rate changes. The sampling schedule for this well has reverted to that for active extraction wells.
	MW-27D	Quarterly	Annual	This well was being sampled more frequently during an evaluation of pumping rate changes. The sampling schedule for this well has reverted to that for inactive extraction wells.

TABLE C-3. WELL SAMPLING FREQUENCY CHANGES FOR 2011

Well Group	Well ID	Sampling Frequency		Reason for Change
		From	To	
Other Toe	AMW-42	Annual	Biennial	TCE concentrations have been below the cleanup level in this well since 2001 and chromium concentrations have been below the cleanup level since 2003.
	AMW-63	Annual	NFS	This was a TOPPS monitoring well. Chromium and TCE concentrations have remained below the cleanup level in this well since it was installed in early 2007.

NOTES:

Cr	= Chromium.
MAROS	= Monitoring and Remediation Optimization System.
MRL	= Method reporting limit
NFS	= No further sampling.
NC	= No change.
TCE	= Trichloroethene.
TOPPS	= Toe of Plume Pilot Study.

**APPENDIX C-2**

**CHROMIUM OUTPUTS**

# MAROS Site Results

**Project:** Boomsnub/Airco Superfund Site

**Location:** Hazel Dell

**User Name:**

**State:** Washington

## User Defined Site and Data Assumptions:

### Hydrogeology and Plume Information:

Groundwater Seepage Velocity: 180 ft/yr  
Current Plume Length: 2500 ft  
Current Plume Width 500 ft  
Number of Tail Wells: 67  
Number of Source Wells: 18

### Down-gradient Information:

Distance from Edge of Tail to Nearest:  
Down-gradient receptor: 9850 ft  
Down-gradient property: -149 ft  
Distance from Source to Nearest:  
Down-gradient receptor: 10000 ft  
Down-gradient property: 1 ft

### Source Information:

Source Treatment: Pump and Treat

**NAPL is not observed at this site.**

### Data Consolidation Assumptions:

Time Period: 1/19/1995 to 10/20/2010  
Consolidation Period: Yearly  
Consolidation Type: Geometric Mean  
Duplicate Consolidation: Maximum  
ND Values: 1/2 Detection Limit  
J Flag Values : Actual Value

### Plume Information Weighting Assumptions:

**Consolidation Step 1. Weight Plume Information by Chemical**  
Summary Weighting: Weighting Applied to All Chemicals Equally  
**Consolidation Step 2. Weight Well Information by Chemical**  
Well Weighting: No Weighting of Wells was Applied.  
Chemical Weighting: No Weighting of Chemicals was Applied.

**Note:** These assumptions were made when consolidating the historical monitoring data and lumping the Wells and COCs.

## 1. Compliance Monitoring/Remediation Optimization Results:

Preliminary Monitoring System Optimization Results: Based on site classification, source treatment and Monitoring System Category the following suggestions are made for site Sampling Frequency, Duration of Sampling before reassessment, and Well Density. These criteria take into consideration: Plume Stability, Type of Plume, and Groundwater Velocity.

COC	Tail Stability	Source Stability	Level of Effort	Sampling Duration	Sampling Frequency	Sampling Density
CHROMIUM, HEXAVALENT	S	PD	M	Remove treatment system if previously reducing concentration	No Recommendation	37

### Note:

**Plume Status:** (I) Increasing; (PI) Probably Increasing; (S) Stable; (NT) No Trend; (PD) Probably Decreasing; (D) Decreasing

**Design Categories:** (E) Extensive; (M) Moderate; (L) Limited (N/A) Not Applicable, Insufficient Data Available

**Level of Monitoring Effort Indicated by Analysis** Moderate

## 2. Spatial Moment Analysis Results:

Moment Type	Constituent	Coefficient of Variation	Mann-Kendall S Statistic	Confidence in Trend	Moment Trend
<b>Zeroth Moment: Mass</b>					
	CHROMIUM, HEXAVALENT	1.43	-112	100.0%	D
<b>1st Moment: Distance to Source</b>					
	CHROMIUM, HEXAVALENT	0.15	-82	100.0%	D
<b>2nd Moment: Sigma XX</b>					
	CHROMIUM, HEXAVALENT	0.37	106	100.0%	I
<b>2nd Moment: Sigma YY</b>					
	CHROMIUM, HEXAVALENT	0.49	112	100.0%	I

Note: The following assumptions were applied for the calculation of the Zeroth Moment:

Porosity: 0.30

Saturated Thickness: Uniform: 65 ft

Mann-Kendall Trend test performed on all sample events for each constituent. Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A)-Due to insufficient Data (< 4 sampling events).

# MAROS Linear Regression Statistics Summary

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

**Time Period:** 1/19/1995 to 10/20/2010

**Consolidation Period:** Yearly

**Consolidation Type:** Geometric Mean

**Duplicate Consolidation:** Maximum

**ND Values:** 1/2 Detection Limit

**J Flag Values :** Actual Value

Well	Source/ Tail	Average Conc (mg/L)	Median Conc (mg/L)	Standard Deviation	All Samples "ND" ?	Ln Slope	Coefficient of Variation	Confidence in Trend	Concentration Trend
CHROMIUM, HEXAVALENT									
MW-6D	S	1.2E-02	8.9E-03	9.6E-03	No	2.5E-04	0.80	92.0%	PI
AMW-58	S	6.5E-03	6.5E-03	3.5E-03	No	-6.5E-04	0.54	94.5%	PD
PW-1B	S	9.7E-01	3.2E-01	1.5E+00	No	-8.0E-04	1.58	100.0%	D
MW-7B	S	1.9E-01	3.9E-02	3.4E-01	No	-8.7E-04	1.80	98.0%	D
MW-6C	S	2.7E-02	1.4E-02	4.0E-02	No	-4.6E-04	1.50	96.6%	D
MW-6B	S	2.4E-01	5.5E-02	4.6E-01	No	-6.1E-04	1.95	100.0%	D
MW-6A	S	5.9E-02	8.3E-03	9.3E-02	No	0.0E+00	0.00	0.0%	N/A
MW-4C	S	1.7E-01	2.0E-01	8.2E-02	No	-2.8E-04	0.47	99.7%	D
MW-4BSHED	S	1.5E+00	2.6E-01	2.1E+00	No	-1.1E-03	1.45	99.8%	D
MW-4A	S	1.5E+00	9.7E-01	1.3E+00	No	-2.4E-04	0.87	95.8%	D
MW-3C	S	6.2E-03	6.0E-03	2.0E-03	No	-8.2E-06	0.33	100.0%	D
MW-3B	S	8.9E-03	8.6E-03	4.2E-03	No	-2.5E-04	0.47	97.4%	D
MW-3A	S	4.8E-01	3.9E-01	3.1E-01	No	-3.4E-04	0.64	100.0%	D
MW-2C	S	6.1E-03	3.9E-03	3.9E-03	No	-2.8E-05	0.63	56.3%	S
MW-2B	S	7.4E-03	6.3E-03	5.0E-03	No	1.2E-04	0.68	75.5%	NT
MW-4B	S	1.3E+00	1.2E+00	1.0E+00	No	-1.5E-04	0.79	93.9%	PD
MW-7C	S	1.1E-02	8.5E-03	6.2E-03	No	-5.4E-05	0.57	63.4%	S
MW-2A	S	6.5E-01	4.5E-01	6.8E-01	No	5.8E-05	1.06	62.3%	NT
AMW-60	T	3.4E-03	3.4E-03	1.9E-03	No	0.0E+00	0.00	0.0%	N/A
AMW-2A	T	2.8E-03	2.8E-03	4.2E-04	No	0.0E+00	0.00	0.0%	N/A
AMW-2B	T	2.5E-03	2.5E-03	0.0E+00	Yes	0.0E+00	0.00	0.0%	N/A
AMW-3A	T	3.9E-03	3.9E-03	0.0E+00	No	0.0E+00	0.00	0.0%	N/A
AMW-42	T	1.5E-01	2.7E-02	3.1E-01	No	-9.1E-04	2.03	99.9%	D
AMW-43	T	2.5E-03	2.8E-03	1.7E-03	No	1.5E-03	0.69	99.8%	I
AMW-44	T	3.3E-03	2.8E-03	3.4E-03	No	4.3E-04	1.00	80.8%	NT
AMW-45	T	4.7E-03	5.3E-03	2.9E-03	No	7.0E-04	0.61	98.8%	I
AMW-59	T	3.4E-03	2.6E-03	1.1E-03	No	-3.0E-04	0.34	82.1%	S
AMW-27	T	2.3E+00	1.5E+00	2.5E+00	No	-1.1E-03	1.05	100.0%	D
AMW-12A	T	7.3E-03	7.3E-03	1.4E-03	No	0.0E+00	0.00	0.0%	N/A
AMW-4A	T	4.2E-03	4.2E-03	0.0E+00	No	0.0E+00	0.00	0.0%	N/A
AMW-1C	T	2.5E-03	2.5E-03	0.0E+00	Yes	0.0E+00	0.00	0.0%	N/A
AMW-1B	T	2.5E-03	2.5E-03	0.0E+00	Yes	0.0E+00	0.00	0.0%	N/A
AMW-1A	T	2.5E-03	2.5E-03	0.0E+00	Yes	0.0E+00	0.00	0.0%	N/A
AMW-19A	T	5.0E-06	5.0E-06	0.0E+00	Yes	0.0E+00	0.00	0.0%	N/A
AMW-18	T	2.1E-03	2.5E-03	8.9E-04	No	1.2E-04	0.43	61.4%	NT
AMW-17	T	1.9E-03	2.5E-03	1.0E-03	No	3.7E-04	0.52	83.2%	NT
AMW-16	T	2.0E-03	2.5E-03	1.0E-03	No	3.4E-04	0.51	84.1%	NT
AMW-13A	T	5.9E-03	5.9E-03	0.0E+00	No	0.0E+00	0.00	0.0%	N/A
AMW-6A	T	7.2E-03	5.9E-03	3.3E-03	No	1.3E-04	0.45	87.3%	NT

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

Well	Source/ Tail	Average Conc (mg/L)	Median Conc (mg/L)	Standard Deviation	All Samples "ND" ?	Ln Slope	Coefficient of Variation	Confidence in Trend	Concentration Trend
<b>CHROMIUM, HEXAVALENT</b>									
AMW-11A	T	3.8E-03	3.7E-03	1.1E-03	No	1.0E-04	0.29	93.0%	PI
AMW-10A	T	5.6E-03	5.5E-03	1.9E-03	No	-3.2E-05	0.34	63.7%	S
AMW-14	T	5.8E-01	1.3E-01	1.4E+00	No	-5.2E-04	2.37	99.9%	D
MW-40	T	2.7E-01	3.0E-01	1.4E-01	No	-5.6E-05	0.50	57.6%	S
MW-21D	T	2.9E+00	1.7E-01	6.8E+00	No	-1.3E-03	2.31	100.0%	D
MW-22D	T	1.6E+00	5.8E-01	2.4E+00	No	-9.8E-04	1.51	100.0%	D
MW-23D	T	2.1E-03	2.5E-03	1.3E-03	No	4.6E-04	0.61	92.1%	PI
MW-25D	T	1.2E+00	2.3E-02	2.9E+00	No	-1.5E-03	2.52	100.0%	D
MW-26D	T	9.6E-01	2.4E-01	1.2E+00	No	-1.2E-03	1.25	100.0%	D
MW-27D	T	7.5E-01	5.8E-02	1.5E+00	No	-1.3E-03	1.98	100.0%	D
MW-30	T	2.7E-03	2.5E-03	1.5E-03	No	2.5E-04	0.56	69.6%	NT
MW-31	T	4.3E-02	1.1E-02	1.0E-01	No	-5.8E-04	2.33	99.7%	D
AMW-61	T	5.9E-01	4.6E-01	6.8E-01	No	-2.3E-03	1.16	91.8%	PD
MW-37	T	4.0E-03	3.8E-03	3.4E-03	No	5.1E-04	0.84	78.0%	NT
MW-1B	T	5.0E-03	4.3E-03	3.9E-03	No	-8.3E-05	0.77	54.7%	S
MW-41	T	8.3E-03	2.7E-03	1.0E-02	No	7.4E-04	1.23	85.7%	NT
MW-46	T	4.4E-03	3.4E-03	4.7E-03	No	6.8E-04	1.08	86.7%	NT
MW-47	T	7.3E-03	5.4E-03	5.2E-03	No	-1.1E-04	0.71	62.6%	S
MW-48	T	6.5E-03	3.5E-03	9.8E-03	No	9.2E-04	1.52	96.6%	I
MW-49	T	2.3E-01	1.9E-01	2.4E-01	No	-6.4E-04	1.04	93.1%	PD
MW-8B	T	4.2E-03	4.1E-03	2.7E-03	No	2.4E-04	0.65	78.0%	NT
MW-9B	T	8.0E-02	2.5E-02	1.3E-01	No	-8.1E-04	1.62	99.7%	D
MW-9C	T	1.5E-02	3.7E-03	2.5E-02	No	6.4E-04	1.65	100.0%	I
MW-35	T	3.6E-01	2.9E-02	1.1E+00	No	-7.0E-04	3.14	98.0%	D
MW-14C	T	8.4E-01	4.6E-01	1.2E+00	No	-5.6E-04	1.40	100.0%	D
RAMW-2C	T	3.7E-03	3.7E-03	0.0E+00	No	0.0E+00	0.00	0.0%	N/A
AMW-7A	T	3.3E-03	3.3E-03	6.9E-04	No	-2.9E-05	0.21	72.6%	S
AMW-8A	T	2.5E-03	2.5E-03	0.0E+00	Yes	0.0E+00	0.00	0.0%	N/A
CPU-12	T	4.8E-02	1.6E-02	6.6E-02	No	-5.8E-04	1.37	100.0%	D
CPU-13	T	1.0E+00	1.6E-01	1.5E+00	No	-1.1E-03	1.49	100.0%	D
CPU-14	T	3.4E-01	2.4E-01	3.0E-01	No	-5.8E-04	0.87	100.0%	D
MW-10B	T	3.1E-01	2.5E-01	2.7E-01	No	-5.0E-04	0.86	100.0%	D
MW-10C	T	5.8E-01	2.7E-01	1.1E+00	No	-3.6E-04	1.90	99.5%	D
MW-20D	T	6.1E+00	7.2E-01	1.1E+01	No	-1.1E-03	1.83	100.0%	D
MW-13C	T	5.8E-02	4.7E-02	2.9E-02	No	-1.7E-04	0.51	99.5%	D
MW-1C	T	4.9E-03	5.6E-03	3.8E-03	No	-9.2E-05	0.78	52.3%	S
MW-14E	T	2.7E+00	2.5E-01	5.7E+00	No	-1.1E-03	2.06	100.0%	D
MW-15E	T	1.2E-02	1.4E-02	5.1E-03	No	-2.6E-05	0.44	57.2%	S
MW-16E	T	4.0E-03	2.5E-03	4.1E-03	No	4.7E-05	1.03	67.5%	NT
MW-17E	T	2.0E-03	2.5E-03	1.0E-03	Yes	2.3E-05	0.50	52.1%	NT
MW-18D	T	3.1E+00	5.9E-01	5.2E+00	No	-8.5E-04	1.66	100.0%	D
MW-18E	T	2.7E-03	2.5E-03	2.9E-03	No	4.3E-04	1.07	93.1%	PI
MW-19D	T	2.4E+00	4.1E-01	4.5E+00	No	-7.6E-04	1.84	100.0%	D
MW-1A	T	6.8E-03	2.5E-03	1.2E-02	No	2.9E-04	1.69	84.6%	NT
AMW-63	T	4.8E-03	5.0E-03	1.8E-03	No	5.8E-04	0.38	81.4%	NT
MW-12C	T	5.6E-03	4.9E-03	3.3E-03	No	-1.4E-04	0.58	95.1%	D

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); COV = Coefficient of Variation

# MAROS Mann-Kendall Statistics Summary

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

**Time Period:** 1/19/1995    to    10/20/2010

**Consolidation Period:** Yearly

**Consolidation Type:** Geometric Mean

**Duplicate Consolidation:** Maximum

**ND Values:** 1/2 Detection Limit

**J Flag Values :** Actual Value

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
<b>CHROMIUM, HEXAVALENT</b>								
MW-4C	S	5	5	0.47	-6	88.3%	No	S
MW-3B	S	8	7	0.47	-14	94.6%	No	PD
MW-3C	S	6	6	0.33	1	50.0%	No	NT
AMW-58	S	4	4	0.54	-4	83.3%	No	S
MW-2C	S	7	5	0.63	-2	55.7%	No	S
MW-2B	S	10	7	0.68	6	66.8%	No	NT
MW-4A	S	11	11	0.87	-17	89.1%	No	S
MW-3A	S	13	13	0.64	-52	100.0%	No	D
MW-4BSHED	S	9	9	1.45	-32	100.0%	No	D
MW-6A	S	3	2	0.00	0	0.0%	No	N/A
MW-6B	S	16	16	1.95	-70	99.9%	No	D
MW-6C	S	8	7	1.50	-6	72.6%	No	NT
MW-6D	S	6	6	0.80	7	86.4%	No	NT
MW-7B	S	5	4	1.80	-10	99.2%	No	D
MW-7C	S	5	5	0.57	0	40.8%	No	S
MW-2A	S	15	15	1.06	3	53.9%	No	NT
PW-1B	S	16	16	1.58	-108	100.0%	No	D
MW-4B	S	9	9	0.79	-18	96.2%	No	D
AMW-8A	T	1	0	0.00	0	0.0%	Yes	N/A
AMW-4A	T	1	1	0.00	0	0.0%	No	N/A
AMW-45	T	10	10	0.61	23	97.7%	No	I
AMW-59	T	5	3	0.34	-3	67.5%	No	S
AMW-60	T	2	2	0.00	0	0.0%	No	N/A
AMW-44	T	10	9	1.00	3	56.9%	No	NT
AMW-61	T	4	4	1.16	-2	62.5%	No	NT
AMW-63	T	4	3	0.38	4	83.3%	No	NT
AMW-43	T	11	9	0.69	29	98.7%	No	I
AMW-7A	T	8	7	0.21	-12	91.1%	No	PD
AMW-1B	T	1	0	0.00	0	0.0%	Yes	N/A
CPU-12	T	16	15	1.37	-70	99.9%	No	D
CPU-13	T	16	16	1.49	-116	100.0%	No	D
CPU-14	T	16	16	0.87	-84	100.0%	No	D
MW-10B	T	16	16	0.86	-80	100.0%	No	D
AMW-6A	T	7	7	0.45	3	61.4%	No	NT
AMW-1A	T	1	0	0.00	0	0.0%	Yes	N/A
AMW-11A	T	7	6	0.29	9	88.1%	No	NT
AMW-12A	T	2	2	0.00	0	0.0%	No	N/A
AMW-13A	T	1	1	0.00	0	0.0%	No	N/A

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
CHROMIUM, HEXAVALENT								
AMW-14	T	12	12	2.37	-58	100.0%	No	D
AMW-16	T	15	3	0.51	28	90.8%	No	PI
AMW-17	T	14	2	0.52	28	92.9%	No	PI
AMW-27	T	13	13	1.05	-74	100.0%	No	D
AMW-19A	T	1	0	0.00	0	0.0%	Yes	N/A
AMW-42	T	12	12	2.03	-46	100.0%	No	D
MW-19D	T	16	16	1.84	-112	100.0%	No	D
AMW-1C	T	1	0	0.00	0	0.0%	Yes	N/A
MW-10C	T	16	16	1.90	-58	99.6%	No	D
AMW-2A	T	2	1	0.00	0	0.0%	No	N/A
AMW-2B	T	2	0	0.00	0	0.0%	Yes	N/A
AMW-3A	T	1	1	0.00	0	0.0%	No	N/A
AMW-18	T	11	1	0.43	11	77.7%	No	NT
MW-46	T	11	8	1.08	12	79.9%	No	NT
MW-18D	T	16	16	1.66	-118	100.0%	No	D
MW-27D	T	16	16	1.98	-108	100.0%	No	D
MW-30	T	9	4	0.56	3	58.0%	No	NT
MW-31	T	13	13	2.33	-39	99.1%	No	D
MW-35	T	12	12	3.14	-24	94.2%	No	PD
MW-37	T	11	9	0.84	7	67.6%	No	NT
MW-25D	T	16	15	2.52	-98	100.0%	No	D
MW-41	T	12	6	1.23	-7	65.6%	No	NT
MW-23D	T	16	7	0.61	50	98.7%	No	I
MW-47	T	10	9	0.71	-11	81.0%	No	S
MW-48	T	11	10	1.52	15	85.9%	No	NT
MW-49	T	10	10	1.04	-27	99.2%	No	D
MW-8B	T	7	5	0.65	7	80.9%	No	NT
MW-9B	T	8	7	1.62	-22	99.8%	No	D
MW-9C	T	6	4	1.65	14	99.6%	No	I
MW-40	T	6	6	0.50	-3	64.0%	No	S
RAMW-2C	T	1	1	0.00	0	0.0%	No	N/A
MW-13C	T	16	16	0.51	-66	99.9%	No	D
MW-14C	T	16	16	1.40	-86	100.0%	No	D
MW-14E	T	16	16	2.06	-114	100.0%	No	D
MW-15E	T	9	9	0.44	14	91.0%	No	PI
MW-16E	T	11	3	1.03	-5	61.9%	No	NT
MW-17E	T	4	0	0.50	-1	50.0%	Yes	S
MW-26D	T	16	16	1.25	-116	100.0%	No	D
MW-18E	T	15	7	1.07	36	95.9%	No	I
MW-12C	T	16	12	0.58	-35	93.6%	No	PD
MW-1A	T	12	8	1.69	15	82.8%	No	NT
MW-1B	T	6	5	0.77	-1	50.0%	No	S
MW-1C	T	5	3	0.78	2	59.2%	No	NT
MW-20D	T	16	16	1.83	-114	100.0%	No	D
MW-21D	T	16	16	2.31	-120	100.0%	No	D
MW-22D	T	16	16	1.51	-116	100.0%	No	D
AMW-10A	T	6	6	0.34	1	50.0%	No	NT

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

Well	Source/ Tail	Number of Samples	Number of Dectects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
CHROMIUM, HEXAVALENT								

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A)- Due to insufficient Data (< 4 sampling events); Source/Tail (S/T)

The Number of Samples and Number of Dectects shown above are post-consolidation values.

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# MAROS Power Analysis for Individual Well Cleanup Status

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

**From Period:** 1/19/1995    **to** 10/20/2010

Well	Sample Size	Sample Mean	Sample Stdev.	Normal Distribution Assumption Cleanup Status	Lognormal Distribution Assumption Cleanup Status	Alpha Level	Expected Power
<b>CHROMIUM, HEXAVALENT</b>		Cleanup Goal (mg/L) = 0.08				Target Level (mg/L) = 0.064	
AMW-10A	6	6.02E-03	2.06E-03	Attained	Cont Sampling	0.05	0.8
AMW-11A	7	3.98E-03	1.21E-03	Attained	Attained	0.05	0.8
AMW-12A	2	8.78E-03	6.72E-04	N/C	N/C	0.05	0.8
AMW-13A	1	8.25E-03	0.00E+00	N/C	N/C	0.05	0.8
AMW-14	12	6.39E-01	1.57E+00	Cont Sampling	Cont Sampling	0.05	0.8
AMW-16	15	2.06E-03	9.54E-04	Attained	Cont Sampling	0.05	0.8
AMW-17	14	2.07E-03	9.32E-04	Attained	Cont Sampling	0.05	0.8
AMW-18	11	2.16E-03	7.95E-04	Attained	Cont Sampling	0.05	0.8
AMW-19A	1	5.00E-06	0.00E+00	N/C	N/C	0.05	0.8
AMW-1A	1	2.50E-03	0.00E+00	N/C	N/C	0.05	0.8
AMW-1B	1	2.50E-03	0.00E+00	N/C	N/C	0.05	0.8
AMW-1C	1	2.50E-03	0.00E+00	N/C	N/C	0.05	0.8
AMW-27	13	2.34E+00	2.45E+00	Cont Sampling	Cont Sampling	0.05	0.8
AMW-2A	2	2.80E-03	4.24E-04	N/C	N/C	0.05	0.8
AMW-2B	2	2.50E-03	0.00E+00	N/C	N/C	0.05	0.8
AMW-3A	1	4.25E-03	0.00E+00	N/C	N/C	0.05	0.8
AMW-42	12	1.67E-01	3.54E-01	Cont Sampling	Cont Sampling	0.05	0.8
AMW-43	11	2.99E-03	1.49E-03	Attained	Cont Sampling	0.05	0.8
AMW-44	10	4.20E-03	4.52E-03	Attained	Cont Sampling	0.05	0.8
AMW-45	10	6.77E-03	3.53E-03	Attained	Attained	0.05	0.8
AMW-4A	1	4.75E-03	0.00E+00	N/C	N/C	0.05	0.8
AMW-58	4	9.75E-03	7.58E-03	Attained	Cont Sampling	0.05	0.8
AMW-59	5	3.47E-03	1.28E-03	Attained	Cont Sampling	0.05	0.8
AMW-60	2	3.90E-03	2.55E-03	N/C	N/C	0.05	0.8
AMW-61	4	5.90E-01	6.84E-01	Cont Sampling	Cont Sampling	0.05	0.8
AMW-63	4	5.49E-03	2.20E-03	Attained	Cont Sampling	0.05	0.8
AMW-6A	7	7.55E-03	3.60E-03	Attained	Cont Sampling	0.05	0.8
AMW-7A	8	3.40E-03	7.19E-04	Attained	Attained	0.05	0.8
AMW-8A	1	2.50E-03	0.00E+00	N/C	N/C	0.05	0.8
CPU-12	16	4.89E-02	6.67E-02	Cont Sampling	Cont Sampling	0.05	0.8
CPU-13	16	1.00E+00	1.50E+00	Cont Sampling	Cont Sampling	0.05	0.8
CPU-14	16	3.43E-01	3.00E-01	Cont Sampling	Not Attained	0.05	0.8

**Project:** Boomsnub/Airco Superfund Site

**Location:** Hazel Dell

**User Name:**

**State:** Washington

Well	Sample Szie	Sample Mean	Sample Stdev.	Normal Distribution Assumption Cleanup Status	Lognormal Distribution Assumption Cleanup Status	Alpha Level	Expected Power
<b>CHROMIUM, HEXAVALENT</b>		Cleanup Goal (mg/L) = 0.08			Target Level (mg/L) = 0.064		
MW-10B	16	3.80E-01	3.57E-01	Cont Sampling	Not Attained	0.05	0.8
MW-10C	16	6.09E-01	1.15E+00	Cont Sampling	Not Attained	0.05	0.8
MW-12C	16	5.83E-03	3.50E-03	Attained	Attained	0.05	0.8
MW-13C	16	5.78E-02	2.96E-02	Attained	Cont Sampling	0.05	0.8
MW-14C	16	9.10E-01	1.38E+00	Cont Sampling	Not Attained	0.05	0.8
MW-14E	16	2.82E+00	5.70E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-15E	9	1.18E-02	4.90E-03	Attained	Cont Sampling	0.05	0.8
MW-16E	11	4.01E-03	4.13E-03	Attained	Attained	0.05	0.8
MW-17E	4	2.00E-03	1.00E-03	Attained	Cont Sampling	0.05	0.8
MW-18D	16	3.22E+00	5.36E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-18E	15	1.66E-02	5.06E-02	Attained	Cont Sampling	0.05	0.8
MW-19D	16	2.53E+00	4.60E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-1A	12	1.21E-02	1.40E-02	Attained	Cont Sampling	0.05	0.8
MW-1B	6	5.68E-03	3.30E-03	Attained	Cont Sampling	0.05	0.8
MW-1C	5	4.92E-03	3.83E-03	Attained	Cont Sampling	0.05	0.8
MW-20D	16	6.27E+00	1.15E+01	Cont Sampling	Cont Sampling	0.05	0.8
MW-21D	16	3.06E+00	7.01E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-22D	16	1.65E+00	2.47E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-23D	16	2.35E-03	1.15E-03	Attained	Cont Sampling	0.05	0.8
MW-25D	16	1.20E+00	3.01E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-26D	16	9.77E-01	1.22E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-27D	16	7.71E-01	1.54E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-2A	15	6.86E-01	7.11E-01	Cont Sampling	Not Attained	0.05	0.8
MW-2B	10	7.64E-03	5.37E-03	Attained	Cont Sampling	0.05	0.8
MW-2C	7	6.20E-03	3.82E-03	Attained	Cont Sampling	0.05	0.8
MW-30	9	2.66E-03	1.49E-03	Attained	Cont Sampling	0.05	0.8
MW-31	13	4.49E-02	1.04E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-35	12	3.71E-01	1.15E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-37	11	4.22E-03	3.45E-03	Attained	Cont Sampling	0.05	0.8
MW-3A	13	5.09E-01	3.42E-01	Cont Sampling	Not Attained	0.05	0.8
MW-3B	8	9.17E-03	4.57E-03	Attained	Cont Sampling	0.05	0.8
MW-3C	6	6.23E-03	1.97E-03	Attained	Cont Sampling	0.05	0.8
MW-40	6	2.72E-01	1.36E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-41	12	2.44E-02	3.41E-02	Attained	Cont Sampling	0.05	0.8
MW-46	11	4.72E-03	4.61E-03	Attained	Cont Sampling	0.05	0.8
MW-47	10	7.86E-03	4.74E-03	Attained	Cont Sampling	0.05	0.8

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

Well	Sample Szie	Sample Mean	Sample Stdev.	Normal Distribution Assumption Cleanup Status	Lognormal Distribution Assumption Cleanup Status	Alpha Level	Expected Power
<b>CHROMIUM, HEXAVALENT</b>		Cleanup Goal (mg/L) = 0.08				Target Level (mg/L) = 0.064	
MW-48	11	7.00E-03	9.50E-03	Attained	Cont Sampling	0.05	0.8
MW-49	10	3.05E-01	2.76E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-4A	11	1.55E+00	1.32E+00	Cont Sampling	Not Attained	0.05	0.8
MW-4B	9	1.79E+00	2.43E+00	Cont Sampling	Not Attained	0.05	0.8
MW-4BSHED	9	1.57E+00	2.30E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-4C	5	1.74E-01	8.21E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-6A	3	6.15E-02	9.16E-02	N/C	N/C	0.05	0.8
MW-6B	16	3.06E-01	6.76E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-6C	8	3.87E-02	7.34E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-6D	6	1.20E-02	9.48E-03	Attained	Cont Sampling	0.05	0.8
MW-7B	5	1.90E-01	3.43E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-7C	5	2.43E-02	3.59E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-8B	7	5.14E-03	2.15E-03	Attained	Cont Sampling	0.05	0.8
MW-9B	8	8.31E-02	1.32E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-9C	6	1.52E-02	2.49E-02	Cont Sampling	Cont Sampling	0.05	0.8
PW-1B	16	1.06E+00	1.74E+00	Cont Sampling	Cont Sampling	0.05	0.8
RAMW-2C	1	3.70E-03	0.00E+00	N/C	N/C	0.05	0.8

Note: N/C refers to "not conducted" because of insufficient data (N<4); S/E indicates the sample mean significantly exceeds the cleanup level and thus no analysis is conducted; Sample Size is the number of concentration data in a sampling location that are used in the analysis; The Target Level is the expected mean concentration in wells after cleanup attainment, it is only used in individual well celanup status evaluation. The test for evaluating attainment status is from EPA (1992). Refer to Appendix A.6 of MAROS Manual for details.

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# Individual Well Cleanup Status - Optional Analysis Results

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

**From Period:** 1/19/1995    **to** 10/20/2010

Well	Sample Size	Sample Mean	Sample Stdev.	Normal Distribution Assumption			Lognormal Distribution Assumption		
				Significantly < Cleanup Goal?	Power	Expected Sample Size	Significantly < Cleanup Goal?	Power	Expected Sample Size
<b>CHROMIUM, HEXAVALENT</b>				Cleanup Goal (mg/L) = 0.08				Alpha Level = 0.05	
AMW-10A	6	6.02E-03	2.06E-03	YES	1.000	<=3	YES	1.000	<=3
AMW-11A	7	3.98E-03	1.21E-03	YES	1.000	<=3	YES	1.000	<=3
AMW-12A	2	8.78E-03	6.72E-04	N/C	N/C	N/C	N/C	N/C	N/C
AMW-13A	1	8.25E-03	0.00E+00	N/C	N/C	N/C	N/C	N/C	N/C
AMW-14	12	6.39E-01	1.57E+00	NO	S/E	S/E	NO	S/E	S/E
AMW-16	15	2.06E-03	9.54E-04	YES	1.000	<=3	YES	0.966	9
AMW-17	14	2.07E-03	9.32E-04	YES	1.000	<=3	YES	0.919	10
AMW-18	11	2.16E-03	7.95E-04	YES	1.000	<=3	YES	0.992	5
AMW-19A	1	5.00E-06	0.00E+00	N/C	N/C	N/C	N/C	N/C	N/C
AMW-1A	1	2.50E-03	0.00E+00	N/C	N/C	N/C	N/C	N/C	N/C
AMW-1B	1	2.50E-03	0.00E+00	N/C	N/C	N/C	N/C	N/C	N/C
AMW-1C	1	2.50E-03	0.00E+00	N/C	N/C	N/C	N/C	N/C	N/C
AMW-27	13	2.34E+00	2.45E+00	NO	S/E	S/E	NO	S/E	S/E
AMW-2A	2	2.80E-03	4.24E-04	N/C	N/C	N/C	N/C	N/C	N/C
AMW-2B	2	2.50E-03	0.00E+00	N/C	N/C	N/C	N/C	N/C	N/C
AMW-3A	1	4.25E-03	0.00E+00	N/C	N/C	N/C	N/C	N/C	N/C
AMW-42	12	1.67E-01	3.54E-01	NO	S/E	S/E	NO	S/E	S/E
AMW-43	11	2.99E-03	1.49E-03	YES	1.000	<=3	YES	0.922	8
AMW-44	10	4.20E-03	4.52E-03	YES	1.000	<=3	YES	1.000	<=3
AMW-45	10	6.77E-03	3.53E-03	YES	1.000	<=3	YES	1.000	<=3
AMW-4A	1	4.75E-03	0.00E+00	N/C	N/C	N/C	N/C	N/C	N/C
AMW-58	4	9.75E-03	7.58E-03	YES	1.000	<=3	YES	0.990	<=3
AMW-59	5	3.47E-03	1.28E-03	YES	1.000	<=3	YES	1.000	<=3
AMW-60	2	3.90E-03	2.55E-03	N/C	N/C	N/C	N/C	N/C	N/C
AMW-61	4	5.90E-01	6.84E-01	NO	S/E	S/E	NO	S/E	S/E
AMW-63	4	5.49E-03	2.20E-03	YES	1.000	<=3	YES	1.000	<=3
AMW-6A	7	7.55E-03	3.60E-03	YES	1.000	<=3	YES	1.000	<=3
AMW-7A	8	3.40E-03	7.19E-04	YES	1.000	<=3	YES	1.000	<=3
AMW-8A	1	2.50E-03	0.00E+00	N/C	N/C	N/C	N/C	N/C	N/C
CPU-12	16	4.89E-02	6.67E-02	YES	0.571	30	NO	0.320	69
CPU-13	16	1.00E+00	1.50E+00	NO	S/E	S/E	NO	S/E	S/E
CPU-14	16	3.43E-01	3.00E-01	NO	S/E	S/E	NO	S/E	S/E

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

Well	Sample Szie	Sample Mean	Sample Stdev.	Normal Distribution Assumption			Lognormal Distribution Assumption						
				Significantly < Cleanup Goal?	Power	Expected Sample Size	Significantly < Cleanup Goal?	Power	Expected Sample Size				
<b>CHROMIUM, HEXAVALENT</b>				Cleanup Goal (mg/L) = 0.08				Alpha Level = 0.05		Expected Power = 0.8			
MW-10B	16	3.80E-01	3.57E-01	NO	S/E	S/E	NO	S/E	S/E				
MW-10C	16	6.09E-01	1.15E+00	NO	S/E	S/E	NO	S/E	S/E				
MW-12C	16	5.83E-03	3.50E-03	YES	1.000	<=3	YES	1.000	<=3				
MW-13C	16	5.78E-02	2.96E-02	YES	0.902	12	YES	0.839	15				
MW-14C	16	9.10E-01	1.38E+00	NO	S/E	S/E	NO	S/E	S/E				
MW-14E	16	2.82E+00	5.70E+00	NO	S/E	S/E	NO	S/E	S/E				
MW-15E	9	1.18E-02	4.90E-03	YES	1.000	<=3	YES	1.000	<=3				
MW-16E	11	4.01E-03	4.13E-03	YES	1.000	<=3	YES	1.000	<=3				
MW-17E	4	2.00E-03	1.00E-03	YES	1.000	<=3	YES	1.000	<=3				
MW-18D	16	3.22E+00	5.36E+00	NO	S/E	S/E	NO	S/E	S/E				
MW-18E	15	1.66E-02	5.06E-02	YES	0.999	5	YES	0.661	22				
MW-19D	16	2.53E+00	4.60E+00	NO	S/E	S/E	NO	S/E	S/E				
MW-1A	12	1.21E-02	1.40E-02	YES	1.000	<=3	YES	1.000	4				
MW-1B	6	5.68E-03	3.30E-03	YES	1.000	<=3	YES	1.000	<=3				
MW-1C	5	4.92E-03	3.83E-03	YES	1.000	<=3	NO	S/E	S/E				
MW-20D	16	6.27E+00	1.15E+01	NO	S/E	S/E	NO	S/E	S/E				
MW-21D	16	3.06E+00	7.01E+00	NO	S/E	S/E	NO	S/E	S/E				
MW-22D	16	1.65E+00	2.47E+00	NO	S/E	S/E	NO	S/E	S/E				
MW-23D	16	2.35E-03	1.15E-03	YES	1.000	<=3	YES	0.964	9				
MW-25D	16	1.20E+00	3.01E+00	NO	S/E	S/E	NO	S/E	S/E				
MW-26D	16	9.77E-01	1.22E+00	NO	S/E	S/E	NO	S/E	S/E				
MW-27D	16	7.71E-01	1.54E+00	NO	S/E	S/E	NO	S/E	S/E				
MW-2A	15	6.86E-01	7.11E-01	NO	S/E	S/E	NO	S/E	S/E				
MW-2B	10	7.64E-03	5.37E-03	YES	1.000	<=3	YES	1.000	<=3				
MW-2C	7	6.20E-03	3.82E-03	YES	1.000	<=3	YES	1.000	<=3				
MW-30	9	2.66E-03	1.49E-03	YES	1.000	<=3	YES	0.765	10				
MW-31	13	4.49E-02	1.04E-01	NO	0.322	55	YES	0.872	11				
MW-35	12	3.71E-01	1.15E+00	NO	S/E	S/E	NO	S/E	S/E				
MW-37	11	4.22E-03	3.45E-03	YES	1.000	<=3	YES	0.718	14				
MW-3A	13	5.09E-01	3.42E-01	NO	S/E	S/E	NO	S/E	S/E				
MW-3B	8	9.17E-03	4.57E-03	YES	1.000	<=3	YES	1.000	<=3				
MW-3C	6	6.23E-03	1.97E-03	YES	1.000	<=3	YES	1.000	<=3				
MW-40	6	2.72E-01	1.36E-01	NO	S/E	S/E	NO	S/E	S/E				
MW-41	12	2.44E-02	3.41E-02	YES	1.000	4	NO	S/E	S/E				
MW-46	11	4.72E-03	4.61E-03	YES	1.000	<=3	YES	0.652	17				
MW-47	10	7.86E-03	4.74E-03	YES	1.000	<=3	YES	1.000	<=3				

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

Well	Sample Size	Sample Mean	Sample Stdev.	Normal Distribution Assumption			Lognormal Distribution Assumption		
				Significantly < Cleanup Goal?	Power	Expected Sample Size	Significantly < Cleanup Goal?	Power	Expected Sample Size
<b>CHROMIUM, HEXAVALENT</b>				Cleanup Goal (mg/L) = 0.08	Alpha Level = 0.05		Expected Power = 0.8		
MW-48	11	7.00E-03	9.50E-03	YES	1.000	<=3	YES	1.000	<=3
MW-49	10	3.05E-01	2.76E-01	NO	S/E	S/E	NO	S/E	S/E
MW-4A	11	1.55E+00	1.32E+00	NO	S/E	S/E	NO	S/E	S/E
MW-4B	9	1.79E+00	2.43E+00	NO	S/E	S/E	NO	S/E	S/E
MW-4BSHED	9	1.57E+00	2.30E+00	NO	S/E	S/E	NO	S/E	S/E
MW-4C	5	1.74E-01	8.21E-02	NO	S/E	S/E	NO	S/E	S/E
MW-6A	3	6.15E-02	9.16E-02	N/C	N/C	N/C	N/C	S/E	S/E
MW-6B	16	3.06E-01	6.76E-01	NO	S/E	S/E	NO	S/E	S/E
MW-6C	8	3.87E-02	7.34E-02	NO	0.448	21	NO	0.545	16
MW-6D	6	1.20E-02	9.48E-03	YES	1.000	<=3	YES	1.000	<=3
MW-7B	5	1.90E-01	3.43E-01	NO	S/E	S/E	NO	S/E	S/E
MW-7C	5	2.43E-02	3.59E-02	YES	0.939	4	YES	0.718	7
MW-8B	7	5.14E-03	2.15E-03	YES	1.000	<=3	YES	1.000	<=3
MW-9B	8	8.31E-02	1.32E-01	NO	S/E	S/E	NO	S/E	S/E
MW-9C	6	1.52E-02	2.49E-02	YES	1.000	<=3	YES	0.917	5
PW-1B	16	1.06E+00	1.74E+00	NO	S/E	S/E	NO	S/E	S/E
RAMW-2C	1	3.70E-03	0.00E+00	N/C	N/C	N/C	N/C	N/C	N/C

Note: N/C refers to "not conducted" because of insufficient data (N<4); S/E indicates the sample mean significantly exceeds the cleanup level and thus no analysis is conducted; Sample Size is the number of concentration data in a sampling location that are used in the power analysis; Expected Sample Size is the number of concentration data needed to reach the Expected Power under current sample variability; The Target Level is the expected mean concentration in wells after cleanup attainment, it is only used in individual well celanup status evaluation. The Student's t-test on mean difference is used in this analysis. Refer to Appendix A.6 of MAROS Manual for details.

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# MAROS Sampling Frequency Optimization Results

## **Project:** Boomsnub/Airco Superfund Site

User Name:

**Location:** Hazel Dell

**State:** Washington

**The Overall Number of Sampling Events:** 264

"Rate of Change" parameters used:

Constituent	Cleanup Goal	Low Rate	Medium Rate	High Rate
CHROMIUM, HEXAVALENT	0.08	0.04	0.08	0.16
Units: Cleanup Goal is in mg/L; all rate parameters are in mg/L/year.				

Well	Recommended Sampling Frequency	Frequency Based on Recent Data	Frequency Based on Overall Data
<b>CHROMIUM, HEXAVALENT</b>			
AMW-10A	Biennial	Annual	Annual
AMW-11A	Biennial	Annual	Annual
AMW-12A	Annual	Annual	Annual
AMW-13A	Annual	Annual	Annual
AMW-14	Annual	Annual	Annual
AMW-16	Biennial	Annual	Annual
AMW-17	Biennial	Annual	Annual
AMW-18	Biennial	Annual	Annual
AMW-19A	Annual	Annual	Annual
AMW-1A	Annual	Annual	Annual
AMW-1B	Annual	Annual	Annual
AMW-1C	Annual	Annual	Annual
AMW-27	Annual	Annual	Annual
AMW-2A	Annual	Annual	Annual
AMW-2B	Annual	Annual	Annual
AMW-3A	Annual	Annual	Annual
AMW-42	Annual	Annual	Annual
AMW-43	Annual	Annual	Annual
AMW-44	Biennial	Annual	Annual
AMW-45	Biennial	Annual	Annual
AMW-4A	Annual	Annual	Annual
AMW-58	Biennial	Annual	Annual
AMW-59	Biennial	Annual	Annual
AMW-60	Annual	Annual	Annual

**Project:** Boomsnub/Airco Superfund Site

**Location:** Hazel Dell

**User Name:**

**State:** Washington

Well	Recommended Sampling Frequency	Frequency Based on Recent Data	Frequency Based on Overall Data
AMW-61	Annual	Annual	Annual
AMW-63	Biennial	Annual	Annual
AMW-6A	Biennial	Annual	Annual
AMW-7A	Biennial	Annual	Annual
AMW-8A	Annual	Annual	Annual
CPU-12	Annual	Annual	Annual
CPU-13	Annual	Annual	Annual
CPU-14	Annual	Annual	Annual
MW-10B	Annual	Annual	Annual
MW-10C	Annual	Annual	Annual
MW-12C	Annual	Annual	Annual
MW-13C	Annual	Annual	Annual
MW-14C	Annual	Annual	Annual
MW-14E	Annual	Annual	Annual
MW-15E	Biennial	Annual	Annual
MW-16E	Biennial	Annual	Annual
MW-17E	Biennial	Annual	Annual
MW-18D	Annual	Annual	Annual
MW-18E	Annual	Annual	Annual
MW-19D	Annual	Annual	Annual
MW-1A	Annual	Annual	Annual
MW-1B	Biennial	Annual	Annual
MW-1C	Biennial	Annual	Annual
MW-20D	Annual	Annual	Annual
MW-21D	Annual	Annual	Annual
MW-22D	Annual	Annual	Annual
MW-23D	Annual	Annual	Annual
MW-25D	Annual	Annual	Annual
MW-26D	Annual	Annual	Annual
MW-27D	Annual	Annual	Annual
MW-2A	Annual	Annual	Annual
MW-2B	Biennial	Annual	Annual
MW-2C	Biennial	Annual	Annual
MW-30	Biennial	Annual	Annual
MW-31	Annual	Annual	Annual
MW-35	Annual	Annual	Annual
MW-37	Biennial	Annual	Annual
MW-3A	Annual	Annual	Annual

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

Well	Recommended Sampling Frequency	Frequency Based on Recent Data	Frequency Based on Overall Data
MW-3B	Biennial	Annual	Annual
MW-3C	Biennial	Annual	Annual
MW-40	Annual	Annual	Annual
MW-41	Annual	Annual	Annual
MW-46	Biennial	Annual	Annual
MW-47	Biennial	Annual	Annual
MW-48	Biennial	Annual	Annual
MW-49	Annual	Annual	Annual
MW-4A	Annual	Annual	Annual
MW-4B	Annual	Annual	Annual
MW-4BSHED	Annual	Annual	Annual
MW-4C	Annual	Annual	Annual
MW-6A	Quarterly	Quarterly	Quarterly
MW-6B	Annual	Annual	Annual
MW-6C	Annual	Annual	Annual
MW-6D	Biennial	Annual	Annual
MW-7B	Annual	Annual	Annual
MW-7C	Annual	Annual	Annual
MW-8B	Biennial	Annual	Annual
MW-9B	Annual	Annual	Annual
MW-9C	Annual	Annual	Annual
PW-1B	Annual	Annual	Annual
RAMW-2C	Annual	Annual	Annual

Note: Sampling frequency is determined considering both recent and overall concentration trends. Sampling Frequency is the final recommendation; Frequency Based on Recent Data is the frequency determined using recent (short) period of monitoring data; Frequency Based on Overall Data is the frequency determined using overall (long) period of monitoring data. If the "recent period" is defined using a different series of sampling events, the results could be different.

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# MAROS Sampling Location Optimization Result

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

**Sampling Events Analyzed:** From Sample Event 1 to Sample Event 264  
1/19/1995 10/20/2010

**Parameters used:**

Constituent	Inside SF	Hull SF	Area Ratio	Conc. Ratio
CHROMIUM, HEXAVALENT	0.1	0.01	0.95	0.95

Well	X (feet)	Y (feet)	Removable?	Average Slope Factor*	Minimum Slope Factor*	Maximum Slope Factor*	Eliminated?
CHROMIUM, HEXAVALENT							
AMW-10A	1098266.25	132923.33	<input checked="" type="checkbox"/>	0.498	0.355	0.682	<input type="checkbox"/>
AMW-11A	1098270.63	132756.36	<input checked="" type="checkbox"/>	0.377	0.101	0.616	<input type="checkbox"/>
AMW-12A	1097891.63	132766.36	<input checked="" type="checkbox"/>	0.379	0.341	0.439	<input type="checkbox"/>
AMW-13A	1097844.38	133039.89	<input checked="" type="checkbox"/>	0.399	0.000	0.653	<input type="checkbox"/>
AMW-14	1095174.75	133490.42	<input checked="" type="checkbox"/>	0.306	0.017	0.642	<input type="checkbox"/>
AMW-16	1095988.00	133665.55	<input checked="" type="checkbox"/>	0.602	0.155	0.897	<input type="checkbox"/>
AMW-17	1096562.13	133519.91	<input checked="" type="checkbox"/>	0.681	0.000	0.879	<input type="checkbox"/>
AMW-18	1096976.25	133403.75	<input checked="" type="checkbox"/>	0.451	0.000	0.737	<input type="checkbox"/>
AMW-19A	1097961.38	132745.06	<input checked="" type="checkbox"/>		0.000	0.000	<input type="checkbox"/>
AMW-1A	1097845.25	132893.08	<input checked="" type="checkbox"/>	0.032	0.000	0.058	<input type="checkbox"/>
AMW-1B	1097844.88	132883.34	<input checked="" type="checkbox"/>	0.007	0.000	0.016	<input type="checkbox"/>
AMW-1C	1097852.50	132885.95	<input checked="" type="checkbox"/>	0.063	0.049	0.080	<input type="checkbox"/>
AMW-27	1094386.13	133515.81	<input checked="" type="checkbox"/>	0.287	0.083	0.623	<input type="checkbox"/>
AMW-2A	1097832.00	132820.73	<input checked="" type="checkbox"/>	0.000	0.000	0.000	<input type="checkbox"/>
AMW-2B	1097831.75	132828.42	<input checked="" type="checkbox"/>	0.077	0.077	0.077	<input type="checkbox"/>
AMW-3A	1097892.63	132637.25	<input checked="" type="checkbox"/>	0.346	0.162	0.507	<input type="checkbox"/>
AMW-42	1093570.50	133791.39	<input checked="" type="checkbox"/>	0.483	0.072	0.784	<input type="checkbox"/>
AMW-43	1093380.50	133942.05	<input checked="" type="checkbox"/>	0.278	0.009	0.633	<input type="checkbox"/>
AMW-44	1093381.00	133882.50	<input checked="" type="checkbox"/>	0.382	0.072	0.876	<input type="checkbox"/>
AMW-45	1093385.00	133830.00	<input checked="" type="checkbox"/>	0.386	0.024	0.814	<input type="checkbox"/>
AMW-4A	1097867.00	133145.05	<input checked="" type="checkbox"/>	0.529	0.529	0.529	<input type="checkbox"/>
AMW-58	1097533.63	132838.81	<input checked="" type="checkbox"/>	0.561	0.196	0.760	<input type="checkbox"/>
AMW-59	1097015.63	133051.66	<input checked="" type="checkbox"/>	0.668	0.566	0.755	<input type="checkbox"/>
AMW-60	1096157.88	133400.44	<input checked="" type="checkbox"/>	0.630	0.630	0.630	<input type="checkbox"/>
AMW-61	1094367.25	133467.44	<input checked="" type="checkbox"/>	0.289	0.289	0.289	<input type="checkbox"/>
AMW-63	1093510.88	133815.56	<input checked="" type="checkbox"/>	0.273	0.000	0.745	<input type="checkbox"/>
AMW-6A	1098315.50	132581.84	<input checked="" type="checkbox"/>	0.272	0.021	0.499	<input type="checkbox"/>
AMW-7A	1098542.13	132679.81	<input checked="" type="checkbox"/>	0.447	0.003	0.803	<input type="checkbox"/>

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

Well	X (feet)	Y (feet)	Removable?	Average Slope Factor*	Minimum Slope Factor*	Maximum Slope Factor*	Eliminated?
AMW-8A	1098555.38	133089.64	<input checked="" type="checkbox"/>	0.000	0.000	0.000	<input type="checkbox"/>
CPU-12	1095433.88	133157.64	<input checked="" type="checkbox"/>	0.359	0.020	0.755	<input type="checkbox"/>
CPU-13	1094877.75	133397.00	<input checked="" type="checkbox"/>	0.139	0.002	0.656	<input type="checkbox"/>
CPU-14	1096130.75	133152.42	<input checked="" type="checkbox"/>	0.338	0.052	0.689	<input type="checkbox"/>
MW-10B	1097254.00	132970.84	<input checked="" type="checkbox"/>	0.263	0.002	0.912	<input type="checkbox"/>
MW-10C	1097250.75	132971.34	<input checked="" type="checkbox"/>	0.257	0.001	0.846	<input type="checkbox"/>
MW-12C	1097182.25	133074.94	<input checked="" type="checkbox"/>	0.594	0.086	0.982	<input type="checkbox"/>
MW-13C	1097114.13	132873.94	<input checked="" type="checkbox"/>	0.313	0.007	0.737	<input type="checkbox"/>
MW-14C	1097053.75	133070.84	<input checked="" type="checkbox"/>	0.185	0.008	0.952	<input type="checkbox"/>
MW-14E	1097068.38	133032.61	<input checked="" type="checkbox"/>	0.192	0.029	0.634	<input type="checkbox"/>
MW-15E	1096785.25	133249.44	<input checked="" type="checkbox"/>	0.384	0.068	0.721	<input type="checkbox"/>
MW-16E	1096698.50	133044.53	<input checked="" type="checkbox"/>	0.619	0.000	0.877	<input type="checkbox"/>
MW-17E	1096564.88	133148.64	<input checked="" type="checkbox"/>	0.750	0.314	0.865	<input type="checkbox"/>
MW-18D	1096779.50	133113.73	<input checked="" type="checkbox"/>	0.259	0.012	0.906	<input type="checkbox"/>
MW-18E	1096799.50	133118.36	<input checked="" type="checkbox"/>	0.636	0.018	0.986	<input type="checkbox"/>
MW-19D	1096403.13	133254.94	<input checked="" type="checkbox"/>	0.143	0.002	0.723	<input type="checkbox"/>
MW-1A	1097744.75	132827.19	<input checked="" type="checkbox"/>	0.441	0.000	0.886	<input type="checkbox"/>
MW-1B	1097744.75	132827.09	<input checked="" type="checkbox"/>	0.560	0.033	0.993	<input type="checkbox"/>
MW-1C	1097744.75	132827.00	<input checked="" type="checkbox"/>	0.242	0.000	0.877	<input type="checkbox"/>
MW-20D	1095961.75	133409.30	<input checked="" type="checkbox"/>	0.207	0.011	0.551	<input type="checkbox"/>
MW-21D	1095484.63	133561.14	<input checked="" type="checkbox"/>	0.207	0.006	0.608	<input type="checkbox"/>
MW-22D	1095455.50	133368.55	<input checked="" type="checkbox"/>	0.172	0.021	0.581	<input type="checkbox"/>
MW-23D	1095517.00	133764.66	<input checked="" type="checkbox"/>	0.764	0.216	0.894	<input type="checkbox"/>
MW-25D	1094389.25	133662.33	<input checked="" type="checkbox"/>	0.351	0.001	0.825	<input type="checkbox"/>
MW-26D	1094375.13	133433.91	<input checked="" type="checkbox"/>	0.203	0.008	0.874	<input type="checkbox"/>
MW-27D	1094883.38	133637.58	<input checked="" type="checkbox"/>	0.165	0.004	0.598	<input type="checkbox"/>
MW-2A	1097544.25	132767.69	<input checked="" type="checkbox"/>	0.278	0.005	0.781	<input type="checkbox"/>
MW-2B	1097544.25	132767.59	<input checked="" type="checkbox"/>	0.352	0.007	0.848	<input type="checkbox"/>
MW-2C	1097544.25	132767.00	<input checked="" type="checkbox"/>	0.199	0.000	0.493	<input type="checkbox"/>
MW-30	1093383.63	133901.48	<input checked="" type="checkbox"/>	0.384	0.003	0.847	<input type="checkbox"/>
MW-31	1093810.00	133700.70	<input checked="" type="checkbox"/>	0.239	0.036	0.642	<input type="checkbox"/>
MW-35	1093675.75	133745.42	<input checked="" type="checkbox"/>	0.331	0.026	0.740	<input type="checkbox"/>
MW-37	1093810.38	133549.30	<input checked="" type="checkbox"/>	0.642	0.112	0.846	<input type="checkbox"/>
MW-3A	1097456.25	132791.06	<input checked="" type="checkbox"/>	0.263	0.020	0.780	<input type="checkbox"/>
MW-3B	1097456.25	132791.09	<input checked="" type="checkbox"/>	0.300	0.000	0.741	<input type="checkbox"/>
MW-3C	1097456.25	132791.00	<input checked="" type="checkbox"/>	0.308	0.001	0.856	<input type="checkbox"/>
MW-40	1096129.75	133391.88	<input checked="" type="checkbox"/>	0.351	0.003	0.777	<input type="checkbox"/>
MW-41	1093463.88	133848.02	<input checked="" type="checkbox"/>	0.521	0.010	0.835	<input type="checkbox"/>

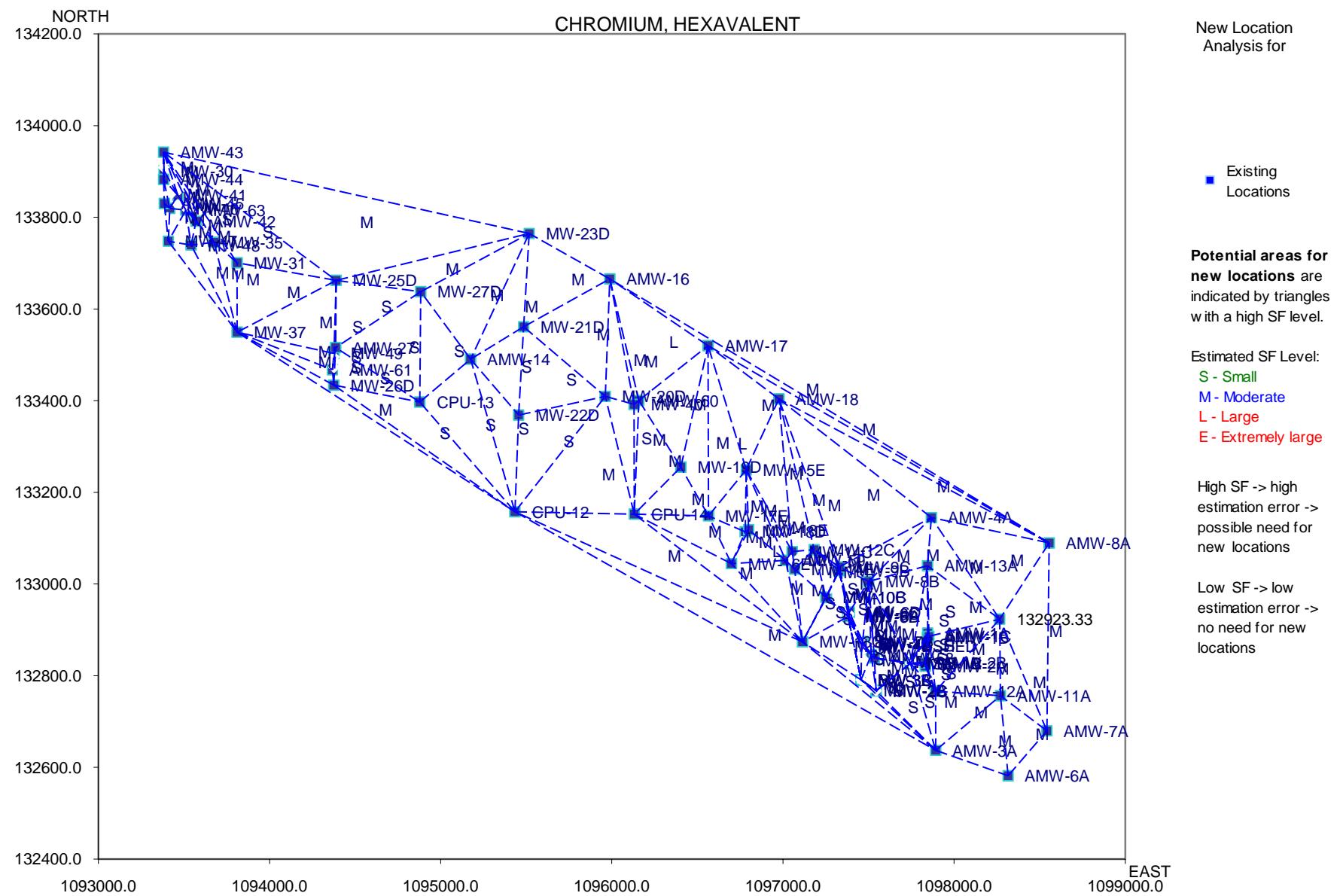
**Project:** Boomsnub/Airco Superfund Site**User Name:****Location:** Hazel Dell**State:** Washington

Well	X (feet)	Y (feet)	Removable?	Average Slope Factor*	Minimum Slope Factor*	Maximum Slope Factor*	Eliminated?
MW-46	1093416.88	133819.34	<input checked="" type="checkbox"/>	0.375	0.000	0.885	<input type="checkbox"/>
MW-47	1093408.50	133747.70	<input checked="" type="checkbox"/>	0.486	0.074	0.765	<input type="checkbox"/>
MW-48	1093541.50	133739.28	<input checked="" type="checkbox"/>	0.554	0.071	0.829	<input type="checkbox"/>
MW-49	1094376.50	133503.09	<input checked="" type="checkbox"/>	0.178	0.014	0.761	<input type="checkbox"/>
MW-4A	1097458.00	132868.42	<input checked="" type="checkbox"/>	0.325	0.064	0.899	<input type="checkbox"/>
MW-4B	1097458.00	132868.41	<input checked="" type="checkbox"/>	0.361	0.056	0.871	<input type="checkbox"/>
MW-4BSHED	1097459.00	132864.77	<input checked="" type="checkbox"/>	0.226	0.050	0.604	<input type="checkbox"/>
MW-4C	1097458.00	132868.00	<input checked="" type="checkbox"/>	0.286	0.126	0.537	<input type="checkbox"/>
MW-6A	1097386.13	132930.42	<input checked="" type="checkbox"/>	0.586	0.329	0.840	<input type="checkbox"/>
MW-6B	1097380.50	132929.25	<input checked="" type="checkbox"/>	0.302	0.004	0.981	<input type="checkbox"/>
MW-6C	1097380.50	132935.98	<input checked="" type="checkbox"/>	0.322	0.098	0.713	<input type="checkbox"/>
MW-6D	1097387.88	132938.81	<input checked="" type="checkbox"/>	0.502	0.020	0.880	<input type="checkbox"/>
MW-7B	1097465.63	132874.84	<input checked="" type="checkbox"/>	0.352	0.144	0.548	<input type="checkbox"/>
MW-7C	1097515.63	132845.50	<input checked="" type="checkbox"/>	0.625	0.206	0.767	<input type="checkbox"/>
MW-8B	1097500.63	133005.73	<input checked="" type="checkbox"/>	0.560	0.073	0.908	<input type="checkbox"/>
MW-9B	1097327.25	133029.19	<input checked="" type="checkbox"/>	0.327	0.024	0.720	<input type="checkbox"/>
MW-9C	1097329.13	133037.23	<input checked="" type="checkbox"/>	0.568	0.098	0.847	<input type="checkbox"/>
PW-1B	1097467.75	132870.81	<input checked="" type="checkbox"/>	0.254	0.001	0.882	<input type="checkbox"/>
RAMW-2C	1097827.63	132805.75	<input checked="" type="checkbox"/>		0.000	0.000	<input type="checkbox"/>

Note: The Slope Factor indicates the relative importance of a well in the monitoring network at a given sampling event; the larger the SF value of a well, the more important the well is and vice versa; the Average Slope Factor measures the overall well importance in the selected time period; the state coordinates system (i.e., X and Y refer to Easting and Northing respectively) or local coordinates systems may be used; wells that are NOT selected for analysis are not shown above.

\* When the report is generated after running the Excel module, SF values will NOT be shown above.

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# MAROS Zeroth Moment Analysis

**Project:** Boomsnub/Airco Superfund Site

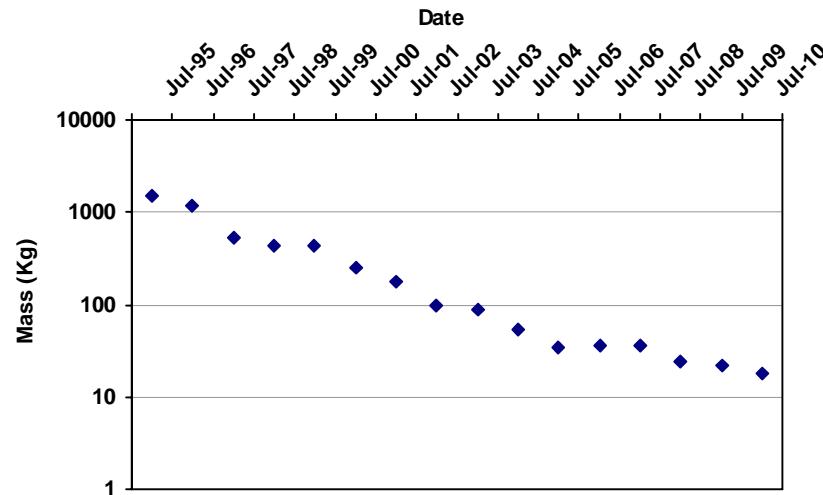
**User Name:** kbeaulieu

**Location:** Hazel Dell

**State:** Washington

**COC:** CHROMIUM, HEXAVALENT

## Change in Dissolved Mass Over Time



**Porosity:** 0.30

**Saturated Thickness:**

Uniform: 65 ft

**Mann Kendall S Statistic:**

-112

**Confidence in Trend:**

100.0%

**Coefficient of Variation:**

1.43

**Zeroth Moment Trend:**

D

## Data Table:

Effective Date	Constituent	Estimated Mass (Kg)	Number of Wells
7/1/1995	CHROMIUM, HEXAVALENT	1.5E+03	62
7/1/1996	CHROMIUM, HEXAVALENT	1.2E+03	32
7/1/1997	CHROMIUM, HEXAVALENT	5.4E+02	49
7/1/1998	CHROMIUM, HEXAVALENT	4.4E+02	47
7/1/1999	CHROMIUM, HEXAVALENT	4.4E+02	47
7/1/2000	CHROMIUM, HEXAVALENT	2.5E+02	44
7/1/2001	CHROMIUM, HEXAVALENT	1.8E+02	48
7/1/2002	CHROMIUM, HEXAVALENT	9.8E+01	53
7/1/2003	CHROMIUM, HEXAVALENT	9.0E+01	57
7/1/2004	CHROMIUM, HEXAVALENT	5.4E+01	61
7/1/2005	CHROMIUM, HEXAVALENT	3.5E+01	47
7/1/2006	CHROMIUM, HEXAVALENT	3.6E+01	51
7/1/2007	CHROMIUM, HEXAVALENT	3.7E+01	47
7/1/2008	CHROMIUM, HEXAVALENT	2.4E+01	55
7/1/2009	CHROMIUM, HEXAVALENT	2.2E+01	56
7/1/2010	CHROMIUM, HEXAVALENT	1.8E+01	42

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect. Moments are not calculated for sample events with less than 6 wells.

# MAROS First Moment Analysis

**Project:** Boomsnub/Airco Superfund Site

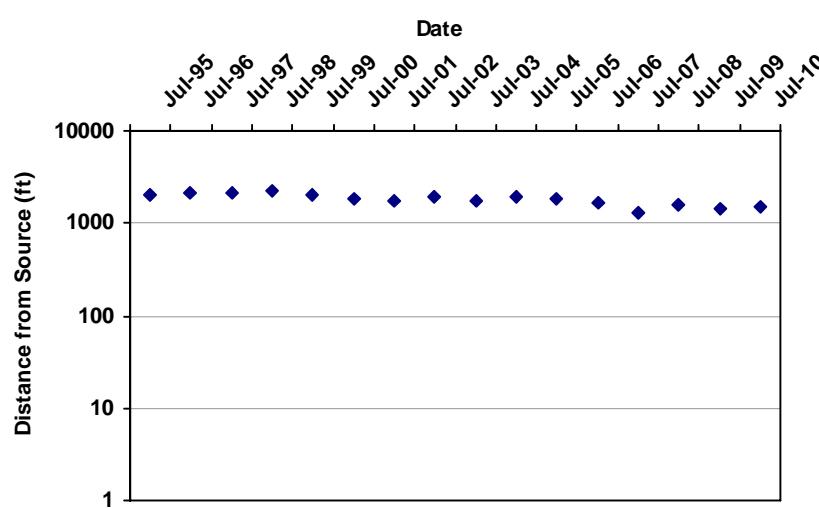
**User Name:** kbeaulieu

**Location:** Hazel Dell

**State:** Washington

**COC:** CHROMIUM, HEXAVALENT

## Distance from Source to Center of Mass



**Mann Kendall S Statistic:**

-82

**Confidence in Trend:**

100.0%

**Coefficient of Variation:**

0.15

**First Moment Trend:**

D

## Data Table:

Effective Date	Constituent	Xc (ft)	Yc (ft)	Distance from Source (ft)	Number of Wells
7/1/1995	CHROMIUM, HEXAVALENT	1,095,484	133,430	2,058	62
7/1/1996	CHROMIUM, HEXAVALENT	1,095,428	133,431	2,112	32
7/1/1997	CHROMIUM, HEXAVALENT	1,095,385	133,418	2,150	49
7/1/1998	CHROMIUM, HEXAVALENT	1,095,288	133,410	2,242	47
7/1/1999	CHROMIUM, HEXAVALENT	1,095,480	133,358	2,043	47
7/1/2000	CHROMIUM, HEXAVALENT	1,095,659	133,305	1,856	44
7/1/2001	CHROMIUM, HEXAVALENT	1,095,738	133,294	1,777	48
7/1/2002	CHROMIUM, HEXAVALENT	1,095,591	133,362	1,937	53
7/1/2003	CHROMIUM, HEXAVALENT	1,095,737	133,335	1,789	57
7/1/2004	CHROMIUM, HEXAVALENT	1,095,577	133,370	1,952	61
7/1/2005	CHROMIUM, HEXAVALENT	1,095,695	133,327	1,828	47
7/1/2006	CHROMIUM, HEXAVALENT	1,095,870	133,303	1,653	51
7/1/2007	CHROMIUM, HEXAVALENT	1,096,223	133,212	1,287	47
7/1/2008	CHROMIUM, HEXAVALENT	1,095,951	133,291	1,571	55
7/1/2009	CHROMIUM, HEXAVALENT	1,096,114	133,256	1,404	56
7/1/2010	CHROMIUM, HEXAVALENT	1,096,035	133,269	1,484	42

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events). Moments are not calculated for sample events with less than 6 wells.

# MAROS First Moment Analysis

**Project:** Boomsnub/Airco Superfund Site

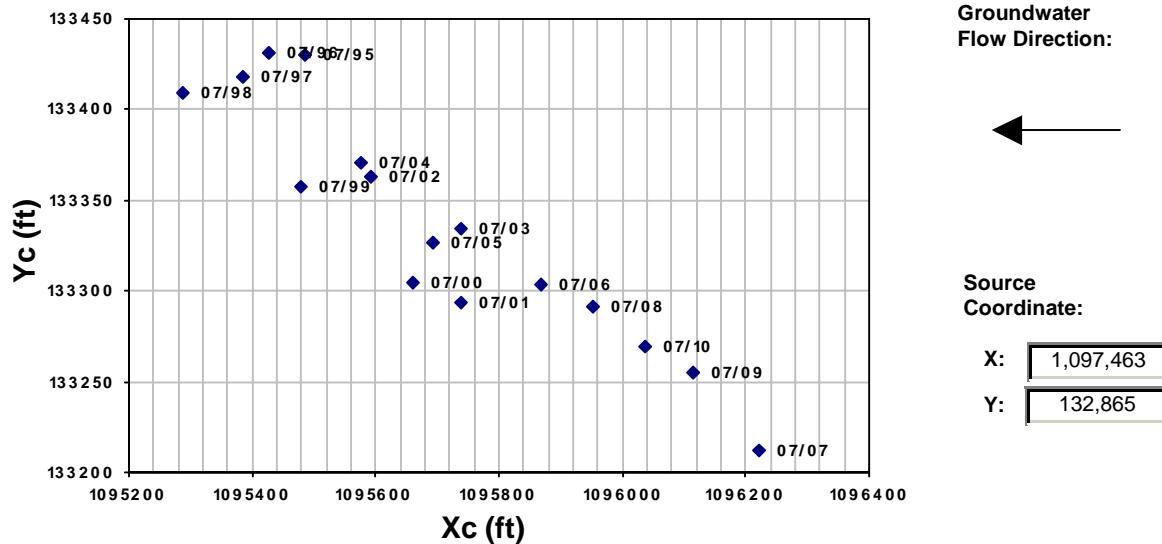
**User Name:** kbeaulieu

**Location:** Hazel Dell

**State:** Washington

**COC:** CHROMIUM, HEXAVALENT

## Change in Location of Center of Mass Over Time



Effective Date	Constituent	Xc (ft)	Yc (ft)	Distance from Source (ft)	Number of Wells
7/1/1995	CHROMIUM, HEXAVALENT	1,095,484	133,430	2,058	62
7/1/1996	CHROMIUM, HEXAVALENT	1,095,428	133,431	2,112	32
7/1/1997	CHROMIUM, HEXAVALENT	1,095,385	133,418	2,150	49
7/1/1998	CHROMIUM, HEXAVALENT	1,095,288	133,410	2,242	47
7/1/1999	CHROMIUM, HEXAVALENT	1,095,480	133,358	2,043	47
7/1/2000	CHROMIUM, HEXAVALENT	1,095,659	133,305	1,856	44
7/1/2001	CHROMIUM, HEXAVALENT	1,095,738	133,294	1,777	48
7/1/2002	CHROMIUM, HEXAVALENT	1,095,591	133,362	1,937	53
7/1/2003	CHROMIUM, HEXAVALENT	1,095,737	133,335	1,789	57
7/1/2004	CHROMIUM, HEXAVALENT	1,095,577	133,370	1,952	61
7/1/2005	CHROMIUM, HEXAVALENT	1,095,695	133,327	1,828	47
7/1/2006	CHROMIUM, HEXAVALENT	1,095,870	133,303	1,653	51
7/1/2007	CHROMIUM, HEXAVALENT	1,096,223	133,212	1,287	47
7/1/2008	CHROMIUM, HEXAVALENT	1,095,951	133,291	1,571	55
7/1/2009	CHROMIUM, HEXAVALENT	1,096,114	133,256	1,404	56
7/1/2010	CHROMIUM, HEXAVALENT	1,096,035	133,269	1,484	42

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events). Moments are not calculated for sample events with less than 6 wells.

# MAROS Second Moment Analysis

**Project:** Boomsnub/Airco Superfund Site

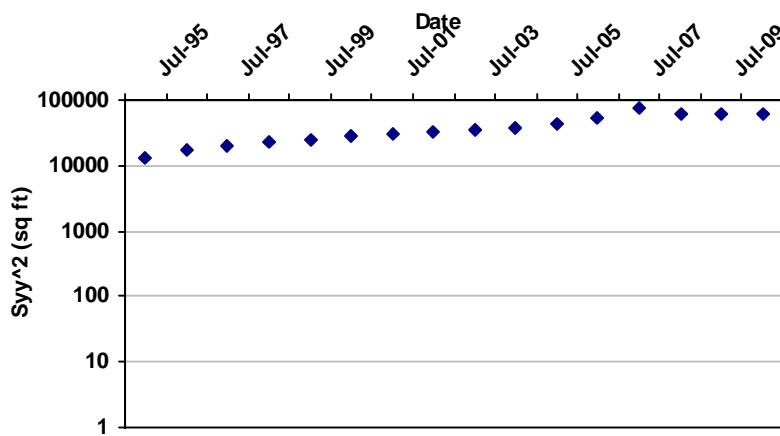
**User Name:** kbeaulieu

**Location:** Hazel Dell

**State:** Washington

**COC:** CHROMIUM, HEXAVALENT

## Change in Plume Spread Over Time



**Mann Kendall S Statistic:**

112

**Confidence in Trend:**

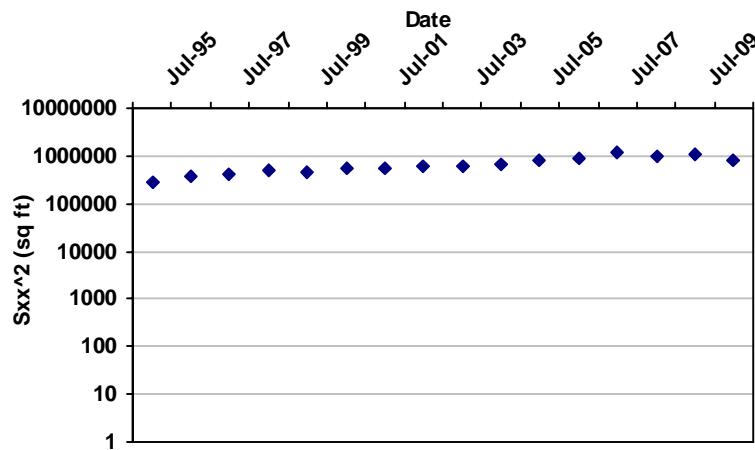
100.0%

**Coefficient of Variation:**

0.49

**Second Moment Trend:**

I



**Mann Kendall S Statistic:**

106

**Confidence in Trend:**

100.0%

**Coefficient of Variation:**

0.37

**Second Moment Trend:**

I

## Data Table:

Effective Date	Constituent	Sigma XX (sq ft)	Sigma YY (sq ft)	Number of Wells
7/1/1995	CHROMIUM, HEXAVALENT	293,416	13,353	62
7/1/1996	CHROMIUM, HEXAVALENT	393,378	17,265	32
7/1/1997	CHROMIUM, HEXAVALENT	415,827	19,430	49
7/1/1998	CHROMIUM, HEXAVALENT	506,980	22,390	47
7/1/1999	CHROMIUM, HEXAVALENT	456,337	24,434	47
7/1/2000	CHROMIUM, HEXAVALENT	533,274	28,913	44
7/1/2001	CHROMIUM, HEXAVALENT	539,997	30,216	48
7/1/2002	CHROMIUM, HEXAVALENT	616,305	32,605	53
7/1/2003	CHROMIUM, HEXAVALENT	617,378	34,366	57
7/1/2004	CHROMIUM, HEXAVALENT	678,558	36,469	61
7/1/2005	CHROMIUM, HEXAVALENT	797,512	44,250	47
7/1/2006	CHROMIUM, HEXAVALENT	902,739	53,267	51

# MAROS Second Moment Analysis

Effective Date	Constituent	Sigma XX (sq ft)	Sigma YY (sq ft)	Number of Wells
7/1/2007	CHROMIUM, HEXAVALENT	1,147,879	76,417	47
7/1/2008	CHROMIUM, HEXAVALENT	947,095	60,003	55
7/1/2009	CHROMIUM, HEXAVALENT	1,051,291	59,586	56
7/1/2010	CHROMIUM, HEXAVALENT	845,743	63,278	42

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events)

The Sigma XX and Sigma YY components are estimated using the given field coordinate system and then rotated to align with the estimated groundwater flow direction. Moments are not calculated for sample events with less than 6 wells.

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# MAROS Plume Analysis Summary

**Project:** Boomsnub/Airco Superfund Site

**Location:** Hazel Dell

**User Name:**

**State:** Washington

**Time Period:** 1/19/1995 **to** 10/20/2010

**Consolidation Period:** Yearly

**Consolidation Type:** Geometric Mean

**Duplicate Consolidation:** Maximum

**ND Values:** 1/2 Detection Limit

**J Flag Values :** Actual Value

Constituent	Well	Source/Tail	Number of Samples	Number of Detects	Average (mg/L)	Median (mg/L)	All Samples "ND" ?	Mann-Kendall	Linear Regression	Modeling	Empirical
<b>CHROMIUM, HEXAVALENT</b>											
MW-4C	S	S	5	5	1.7E-01	2.0E-01	No	S	D	N/A	N/A
MW-3B	S	S	8	7	8.9E-03	8.6E-03	No	PD	D	N/A	N/A
MW-3C	S	S	6	6	6.2E-03	6.0E-03	No	NT	D	N/A	N/A
AMW-58	S	S	4	4	6.5E-03	6.5E-03	No	S	PD	N/A	N/A
MW-2C	S	S	7	5	6.1E-03	3.9E-03	No	S	S	N/A	N/A
MW-2B	S	S	10	7	7.4E-03	6.3E-03	No	NT	NT	N/A	N/A
MW-4A	S	S	11	11	1.5E+00	9.7E-01	No	S	D	N/A	N/A
MW-3A	S	S	13	13	4.8E-01	3.9E-01	No	D	D	N/A	N/A
MW-4BSHED	S	S	9	9	1.5E+00	2.6E-01	No	D	D	N/A	N/A
MW-6A	S	S	3	2	5.9E-02	8.3E-03	No	N/A	N/A	N/A	N/A
MW-6B	S	S	16	16	2.4E-01	5.5E-02	No	D	D	N/A	N/A
MW-6C	S	S	8	7	2.7E-02	1.4E-02	No	NT	D	N/A	N/A
MW-6D	S	S	6	6	1.2E-02	8.9E-03	No	NT	PI	N/A	N/A
MW-7B	S	S	5	4	1.9E-01	3.9E-02	No	D	D	N/A	N/A
MW-7C	S	S	5	5	1.1E-02	8.5E-03	No	S	S	N/A	N/A
MW-2A	S	S	15	15	6.5E-01	4.5E-01	No	NT	NT	N/A	N/A
PW-1B	S	S	16	16	9.7E-01	3.2E-01	No	D	D	N/A	N/A
MW-4B	S	S	9	9	1.3E+00	1.2E+00	No	D	PD	N/A	N/A
AMW-8A	T	T	1	0	2.5E-03	2.5E-03	Yes	N/A	N/A	N/A	N/A
AMW-4A	T	T	1	1	4.2E-03	4.2E-03	No	N/A	N/A	N/A	N/A
AMW-45	T	T	10	10	4.7E-03	5.3E-03	No	I	I	N/A	N/A
AMW-59	T	T	5	3	3.4E-03	2.6E-03	No	S	S	N/A	N/A

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

Constituent	Well	Source/Tail	Number of Samples	Number of Detects	Average (mg/L)	Median (mg/L)	All Samples "ND" ?	Mann-Kendall	Linear Regression Modeling	Empirical
CHROMIUM, HEXAVALENT										
AMW-60	T	2	2	3.4E-03	3.4E-03	No	N/A	N/A	N/A	N/A
AMW-44	T	10	9	3.3E-03	2.8E-03	No	NT	NT	N/A	N/A
AMW-61	T	4	4	5.9E-01	4.6E-01	No	NT	PD	N/A	N/A
AMW-63	T	4	3	4.8E-03	5.0E-03	No	NT	NT	N/A	N/A
AMW-43	T	11	9	2.5E-03	2.8E-03	No	I	I	N/A	N/A
AMW-7A	T	8	7	3.3E-03	3.3E-03	No	PD	S	N/A	N/A
AMW-1B	T	1	0	2.5E-03	2.5E-03	Yes	N/A	N/A	N/A	N/A
CPU-12	T	16	15	4.8E-02	1.6E-02	No	D	D	N/A	N/A
CPU-13	T	16	16	1.0E+00	1.6E-01	No	D	D	N/A	N/A
CPU-14	T	16	16	3.4E-01	2.4E-01	No	D	D	N/A	N/A
MW-10B	T	16	16	3.1E-01	2.5E-01	No	D	D	N/A	N/A
AMW-6A	T	7	7	7.2E-03	5.9E-03	No	NT	NT	N/A	N/A
AMW-1A	T	1	0	2.5E-03	2.5E-03	Yes	N/A	N/A	N/A	N/A
AMW-11A	T	7	6	3.8E-03	3.7E-03	No	NT	PI	N/A	N/A
AMW-12A	T	2	2	7.3E-03	7.3E-03	No	N/A	N/A	N/A	N/A
AMW-13A	T	1	1	5.9E-03	5.9E-03	No	N/A	N/A	N/A	N/A
AMW-14	T	12	12	5.8E-01	1.3E-01	No	D	D	N/A	N/A
AMW-16	T	15	3	2.0E-03	2.5E-03	No	PI	NT	N/A	N/A
AMW-17	T	14	2	1.9E-03	2.5E-03	No	PI	NT	N/A	N/A
AMW-27	T	13	13	2.3E+00	1.5E+00	No	D	D	N/A	N/A
AMW-19A	T	1	0	5.0E-06	5.0E-06	Yes	N/A	N/A	N/A	N/A
AMW-42	T	12	12	1.5E-01	2.7E-02	No	D	D	N/A	N/A
MW-19D	T	16	16	2.4E+00	4.1E-01	No	D	D	N/A	N/A
AMW-1C	T	1	0	2.5E-03	2.5E-03	Yes	N/A	N/A	N/A	N/A
MW-10C	T	16	16	5.8E-01	2.7E-01	No	D	D	N/A	N/A
AMW-2A	T	2	1	2.8E-03	2.8E-03	No	N/A	N/A	N/A	N/A
AMW-2B	T	2	0	2.5E-03	2.5E-03	Yes	N/A	N/A	N/A	N/A
AMW-3A	T	1	1	3.9E-03	3.9E-03	No	N/A	N/A	N/A	N/A
AMW-18	T	11	1	2.1E-03	2.5E-03	No	NT	NT	N/A	N/A
MW-46	T	11	8	4.4E-03	3.4E-03	No	NT	NT	N/A	N/A
MW-18D	T	16	16	3.1E+00	5.9E-01	No	D	D	N/A	N/A
MW-27D	T	16	16	7.5E-01	5.8E-02	No	D	D	N/A	N/A
MW-30	T	9	4	2.7E-03	2.5E-03	No	NT	NT	N/A	N/A
MW-31	T	13	13	4.3E-02	1.1E-02	No	D	D	N/A	N/A

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

Constituent	Well	Source/Tail	Number of Samples	Number of Detects	Average (mg/L)	Median (mg/L)	All Samples "ND" ?	Mann-Kendall	Linear Regression Modeling	Empirical
CHROMIUM, HEXAVALENT										
MW-35	T	12	12	3.6E-01	2.9E-02	No	PD	D	N/A	N/A
MW-37	T	11	9	4.0E-03	3.8E-03	No	NT	NT	N/A	N/A
MW-25D	T	16	15	1.2E+00	2.3E-02	No	D	D	N/A	N/A
MW-41	T	12	6	8.3E-03	2.7E-03	No	NT	NT	N/A	N/A
MW-23D	T	16	7	2.1E-03	2.5E-03	No	I	PI	N/A	N/A
MW-47	T	10	9	7.3E-03	5.4E-03	No	S	S	N/A	N/A
MW-48	T	11	10	6.5E-03	3.5E-03	No	NT	I	N/A	N/A
MW-49	T	10	10	2.3E-01	1.9E-01	No	D	PD	N/A	N/A
MW-8B	T	7	5	4.2E-03	4.1E-03	No	NT	NT	N/A	N/A
MW-9B	T	8	7	8.0E-02	2.5E-02	No	D	D	N/A	N/A
MW-9C	T	6	4	1.5E-02	3.7E-03	No	I	I	N/A	N/A
MW-40	T	6	6	2.7E-01	3.0E-01	No	S	S	N/A	N/A
RAMW-2C	T	1	1	3.7E-03	3.7E-03	No	N/A	N/A	N/A	N/A
MW-13C	T	16	16	5.8E-02	4.7E-02	No	D	D	N/A	N/A
MW-14C	T	16	16	8.4E-01	4.6E-01	No	D	D	N/A	N/A
MW-14E	T	16	16	2.7E+00	2.5E-01	No	D	D	N/A	N/A
MW-15E	T	9	9	1.2E-02	1.4E-02	No	PI	S	N/A	N/A
MW-16E	T	11	3	4.0E-03	2.5E-03	No	NT	NT	N/A	N/A
MW-17E	T	4	0	2.0E-03	2.5E-03	Yes	S	NT	N/A	N/A
MW-26D	T	16	16	9.6E-01	2.4E-01	No	D	D	N/A	N/A
MW-18E	T	15	7	2.7E-03	2.5E-03	No	I	PI	N/A	N/A
MW-12C	T	16	12	5.6E-03	4.9E-03	No	PD	D	N/A	N/A
MW-1A	T	12	8	6.8E-03	2.5E-03	No	NT	NT	N/A	N/A
MW-1B	T	6	5	5.0E-03	4.3E-03	No	S	S	N/A	N/A
MW-1C	T	5	3	4.9E-03	5.6E-03	No	NT	S	N/A	N/A
MW-20D	T	16	16	6.1E+00	7.2E-01	No	D	D	N/A	N/A
MW-21D	T	16	16	2.9E+00	1.7E-01	No	D	D	N/A	N/A
MW-22D	T	16	16	1.6E+00	5.8E-01	No	D	D	N/A	N/A
AMW-10A	T	6	6	5.6E-03	5.5E-03	No	NT	S	N/A	N/A

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); Source/Tail (S/T)

The Number of Samples and Number of Detects shown above are post-consolidation values.

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## **APPENDIX C-3**

### **TCE OUTPUTS**

# MAROS Site Results

**Project:** Boomsnub/Airco Superfund Site

**Location:** Hazel Dell

**User Name:**

**State:** Washington

## User Defined Site and Data Assumptions:

### Hydrogeology and Plume Information:

Groundwater Seepage Velocity: 180 ft/yr  
Current Plume Length: 3000 ft  
Current Plume Width 500 ft  
Number of Tail Wells: 73  
Number of Source Wells: 25

### Down-gradient Information:

Distance from Edge of Tail to Nearest:  
Down-gradient receptor: 9850 ft  
Down-gradient property: -149 ft  
Distance from Source to Nearest:  
Down-gradient receptor: 10000 ft  
Down-gradient property: 1 ft

### Source Information:

Source Treatment: Pump and Treat

**NAPL is not observed at this site.**

### Data Consolidation Assumptions:

Time Period: 1/19/1995 to 10/20/2010  
Consolidation Period: Yearly  
Consolidation Type: Geometric Mean  
Duplicate Consolidation: Maximum  
ND Values: 1/2 Detection Limit  
J Flag Values : Actual Value

### Plume Information Weighting Assumptions:

**Consolidation Step 1. Weight Plume Information by Chemical**  
Summary Weighting: Weighting Applied to All Chemicals Equally  
**Consolidation Step 2. Weight Well Information by Chemical**  
Well Weighting: No Weighting of Wells was Applied.  
Chemical Weighting: No Weighting of Chemicals was Applied.

**Note:** These assumptions were made when consolidating the historical monitoring data and lumping the Wells and COCs.

## 1. Compliance Monitoring/Remediation Optimization Results:

Preliminary Monitoring System Optimization Results: Based on site classification, source treatment and Monitoring System Category the following suggestions are made for site Sampling Frequency, Duration of Sampling before reassessment, and Well Density. These criteria take into consideration: Plume Stability, Type of Plume, and Groundwater Velocity.

COC	Tail Stability	Source Stability	Level of Effort	Sampling Duration	Sampling Frequency	Sampling Density
TRICHLOROETHYLENE (TCE)	PD	PD	L	Continue remediation mechanism until reach stable trend or	No Recommendation	40

### Note:

**Plume Status:** (I) Increasing; (PI) Probably Increasing; (S) Stable; (NT) No Trend; (PD) Probably Decreasing; (D) Decreasing

**Design Categories:** (E) Extensive; (M) Moderate; (L) Limited (N/A) Not Applicable, Insufficient Data Available

**Level of Monitoring Effort Indicated by Analysis**

## 2. Spatial Moment Analysis Results:

Moment Type	Constituent	Coefficient of Variation	Mann-Kendall S Statistic	Confidence in Trend	Moment Trend
<b>Zeroth Moment: Mass</b>					
	TRICHLOROETHYLENE (TCE)	1.08	-112	100.0%	D
<b>1st Moment: Distance to Source</b>					
	TRICHLOROETHYLENE (TCE)	0.11	-20	80.1%	S
<b>2nd Moment: Sigma XX</b>					
	TRICHLOROETHYLENE (TCE)	0.28	-18	77.5%	S
<b>2nd Moment: Sigma YY</b>					
	TRICHLOROETHYLENE (TCE)	0.31	-54	99.2%	D

Note: The following assumptions were applied for the calculation of the Zeroth Moment:

Porosity: 0.30

Saturated Thickness: Uniform: 65 ft

Mann-Kendall Trend test performed on all sample events for each constituent. Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A)-Due to insufficient Data (< 4 sampling events).

# MAROS Linear Regression Statistics Summary

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

**Time Period:** 1/19/1995 to 10/20/2010

**Consolidation Period:** Yearly

**Consolidation Type:** Geometric Mean

**Duplicate Consolidation:** Maximum

**ND Values:** 1/2 Detection Limit

**J Flag Values :** Actual Value

Well	Source/ Tail	Average Conc (mg/L)	Median Conc (mg/L)	Standard Deviation	All Samples "ND" ?	Ln Slope	Coefficient of Variation	Confidence in Trend	Concentration Trend
<b>TRICHLOROETHYLENE (TCE)</b>									
MW-1C	S	1.1E-03	2.5E-04	3.0E-03	No	-2.0E-04	2.69	71.8%	NT
AMW-12A	S	1.6E+00	8.1E-01	2.4E+00	No	-1.2E-03	1.48	100.0%	D
RAMW-2C	S	3.3E-04	2.5E-04	2.2E-04	No	-1.5E-04	0.67	91.6%	PD
MW-1B	S	1.4E-03	2.5E-04	4.0E-03	No	-4.6E-04	2.78	95.6%	D
MW-1A	S	1.3E+00	1.1E+00	1.2E+00	No	-1.2E-03	0.90	100.0%	D
AMW-55C	S	2.7E-04	2.5E-04	5.5E-05	No	1.1E-04	0.20	88.0%	NT
AMW-55A	S	9.7E-03	9.5E-04	1.5E-02	No	-1.6E-03	1.56	99.4%	D
AMW-54C	S	2.7E-04	2.5E-04	4.1E-05	No	1.1E-04	0.15	94.8%	PI
AMW-54A	S	4.4E-02	2.2E-03	5.9E-02	No	-2.0E-03	1.35	99.3%	D
AMW-53C	S	2.4E-04	2.5E-04	1.5E-05	No	-5.1E-05	0.06	92.8%	PD
AMW-53B	S	1.2E-03	1.0E-03	8.0E-04	No	-8.0E-04	0.65	99.7%	D
AMW-53A	S	4.7E-02	1.2E-02	8.2E-02	No	-1.1E-03	1.73	97.8%	D
AMW-52C	S	2.5E-04	2.5E-04	4.4E-20	Yes	-3.5E-19	0.00	100.0%	D
AMW-13A	S	4.4E-03	8.0E-04	8.5E-03	No	-2.3E-04	1.95	82.1%	NT
AMW-52A	S	4.0E-04	2.6E-04	3.2E-04	No	-6.2E-04	0.80	97.5%	D
AMW-19A	S	8.9E-02	7.3E-02	1.2E-01	No	-1.1E-03	1.34	100.0%	D
AMW-19B	S	4.0E-04	2.9E-04	2.4E-04	No	1.6E-04	0.59	87.1%	NT
AMW-1A	S	1.6E-01	8.2E-02	2.4E-01	No	-1.2E-03	1.50	100.0%	D
AMW-1B	S	3.8E-03	4.8E-04	1.1E-02	No	-4.8E-04	2.82	98.8%	D
AMW-26	S	1.8E-02	2.4E-03	2.5E-02	No	-1.2E-03	1.40	100.0%	D
AMW-2A	S	1.3E+00	7.1E-01	1.5E+00	No	-1.2E-03	1.16	100.0%	D
AMW-2B	S	1.4E-03	5.1E-04	2.6E-03	No	-3.3E-04	1.87	97.1%	D
AMW-3A	S	6.5E-03	6.4E-03	6.3E-03	No	-7.1E-04	0.96	100.0%	D
AMW-1C	S	1.7E-03	2.5E-04	4.7E-03	No	-3.9E-04	2.73	93.9%	PD
AMW-4A	S	2.8E-04	2.5E-04	9.9E-05	No	-1.7E-04	0.35	99.8%	D
AMW-8A	T	9.3E-02	5.5E-02	1.6E-01	No	-1.2E-03	1.69	100.0%	D
AMW-58	T	1.8E-03	1.3E-03	1.8E-03	No	-1.7E-03	1.04	99.1%	D
AMW-59	T	1.4E-01	1.3E-01	5.5E-02	No	-3.7E-04	0.40	91.1%	PD
AMW-60	T	5.4E-04	5.4E-04	4.0E-04	No	0.0E+00	0.00	0.0%	N/A
AMW-61	T	1.9E-02	1.4E-02	1.7E-02	No	-9.8E-04	0.90	91.4%	PD
AMW-63	T	2.1E-04	2.4E-04	5.7E-05	No	-9.9E-05	0.27	57.5%	S
CPU-12	T	4.6E-03	4.0E-03	2.3E-03	No	1.5E-05	0.49	58.6%	NT
AMW-7A	T	3.4E-04	2.5E-04	1.9E-04	No	2.7E-04	0.55	88.9%	NT
AMW-56C	T	2.7E-04	2.5E-04	7.4E-05	No	3.0E-04	0.27	99.9%	I
AMW-18	T	8.9E-02	1.0E-03	1.5E-01	No	1.3E-03	1.74	100.0%	I
AMW-6A	T	4.7E-04	4.8E-04	2.0E-04	No	1.2E-04	0.44	87.7%	NT
AMW-56A	T	8.8E-02	2.0E-03	2.1E-01	No	-2.3E-03	2.42	99.5%	D
AMW-45	T	1.8E-04	2.5E-04	1.1E-04	Yes	8.4E-04	0.60	95.8%	I
AMW-44	T	1.8E-04	2.5E-04	1.1E-04	Yes	8.4E-04	0.60	95.8%	I

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

Well	Source/ Tail	Average Conc (mg/L)	Median Conc (mg/L)	Standard Deviation	All Samples "ND" ?	Ln Slope	Coefficient of Variation	Confidence in Trend	Concentration Trend
<b>TRICHLOROETHYLENE (TCE)</b>									
AMW-43	T	2.1E-04	2.5E-04	9.9E-05	Yes	6.8E-04	0.48	95.0%	I
AMW-10A	T	3.5E-04	3.7E-04	1.7E-04	No	-2.6E-05	0.49	59.2%	S
AMW-27	T	4.9E-02	5.0E-02	1.9E-02	No	-2.8E-04	0.39	100.0%	D
AMW-17	T	8.6E-03	2.3E-03	1.4E-02	No	-5.3E-04	1.66	100.0%	D
AMW-16	T	2.2E-02	7.1E-03	2.7E-02	No	-7.4E-04	1.20	100.0%	D
AMW-14	T	2.6E-02	4.4E-03	6.8E-02	No	-8.8E-04	2.60	100.0%	D
AMW-11A	T	4.9E-04	4.8E-04	2.6E-04	No	1.8E-04	0.53	95.6%	I
CPU-14	T	2.7E-02	2.5E-02	1.7E-02	No	-3.4E-04	0.63	100.0%	D
MW-10B	T	1.2E-01	5.2E-02	1.8E-01	No	-2.4E-04	1.58	94.4%	PD
AMW-42	T	4.6E-03	1.3E-03	9.1E-03	No	-7.5E-04	1.98	99.6%	D
MW-4BSHED	T	4.1E-02	1.2E-02	5.8E-02	No	-6.9E-04	1.43	97.3%	D
MW-3A	T	8.3E-04	7.7E-04	5.4E-04	No	-6.1E-05	0.65	63.0%	S
MW-3B	T	1.0E-02	9.2E-03	9.4E-03	No	-4.0E-04	0.91	99.8%	D
MW-3C	T	8.8E-03	9.4E-03	3.9E-03	No	-3.6E-04	0.44	99.8%	D
MW-40	T	9.5E-03	4.4E-03	1.3E-02	No	-9.1E-04	1.40	99.1%	D
MW-41	T	3.7E-04	2.5E-04	3.8E-04	No	6.9E-04	1.02	95.6%	I
MW-46	T	2.1E-04	2.5E-04	9.9E-05	Yes	6.8E-04	0.48	95.0%	I
MW-47	T	1.8E-04	2.5E-04	1.1E-04	Yes	8.4E-04	0.60	95.8%	I
MW-48	T	1.9E-04	2.5E-04	1.0E-04	Yes	7.3E-04	0.54	96.5%	I
MW-49	T	9.3E-03	7.9E-03	7.6E-03	No	-3.2E-04	0.82	85.6%	S
CPU-13	T	2.1E-02	5.4E-03	3.0E-02	No	-7.4E-04	1.43	100.0%	D
MW-4B	T	7.0E-02	7.7E-03	1.7E-01	No	9.2E-05	2.37	59.9%	NT
MW-31	T	2.9E-03	5.7E-04	5.9E-03	No	-9.1E-04	2.03	100.0%	D
MW-4C	T	2.4E-02	3.2E-02	1.6E-02	No	-4.7E-04	0.66	99.7%	D
MW-6A	T	2.7E-03	2.5E-04	4.2E-03	No	0.0E+00	0.00	0.0%	N/A
MW-6B	T	1.9E-01	1.4E-01	2.5E-01	No	-6.9E-04	1.32	100.0%	D
MW-6C	T	3.2E-02	3.4E-02	2.2E-02	No	-7.7E-04	0.69	99.2%	D
MW-6D	T	1.9E-02	2.1E-02	1.2E-02	No	-4.2E-04	0.63	100.0%	D
MW-7B	T	1.6E-01	1.1E-01	1.5E-01	No	-6.3E-04	0.97	97.3%	D
MW-7C	T	4.4E-03	8.5E-04	7.1E-03	No	-8.0E-04	1.64	99.7%	D
MW-8B	T	5.5E-01	3.5E-02	9.8E-01	No	-1.0E-03	1.77	99.7%	D
MW-9B	T	3.8E-01	6.0E-02	5.5E-01	No	-9.3E-04	1.44	100.0%	D
MW-9C	T	3.9E-01	7.8E-02	6.0E-01	No	-1.1E-03	1.53	99.4%	D
MW-4A	T	1.7E-02	4.8E-03	3.5E-02	No	2.4E-04	2.00	76.9%	NT
MW-21D	T	3.1E-01	6.1E-02	5.8E-01	No	-1.0E-03	1.85	100.0%	D
MW-10C	T	2.0E-01	9.6E-02	3.3E-01	No	-7.5E-04	1.64	100.0%	D
MW-12C	T	8.4E-01	5.2E-02	2.1E+00	No	-1.0E-03	2.53	100.0%	D
MW-13C	T	9.0E-03	6.8E-03	6.9E-03	No	-3.7E-04	0.77	100.0%	D
MW-14C	T	2.7E-01	6.4E-02	4.4E-01	No	-6.5E-04	1.66	100.0%	D
MW-14E	T	1.0E+00	2.9E-01	1.6E+00	No	-7.5E-04	1.63	100.0%	D
MW-15E	T	1.6E-01	2.1E-02	3.0E-01	No	-8.2E-04	1.87	100.0%	D
MW-16E	T	2.5E-03	2.8E-03	2.0E-03	No	4.0E-04	0.78	99.1%	I
MW-17E	T	4.3E-04	3.2E-04	2.9E-04	No	-2.6E-04	0.68	81.8%	S
MW-18D	T	9.9E-01	3.1E-01	1.5E+00	No	-7.3E-04	1.48	100.0%	D
MW-18E	T	6.9E-01	3.6E-01	7.2E-01	No	-3.6E-04	1.04	99.6%	D
MW-37	T	2.1E-04	2.5E-04	9.9E-05	Yes	4.9E-04	0.48	87.0%	NT
MW-20D	T	9.3E-01	2.5E-01	1.2E+00	No	-9.1E-04	1.33	100.0%	D
MW-35	T	1.3E-02	5.9E-03	2.0E-02	No	-3.6E-04	1.63	92.1%	PD
MW-22D	T	8.3E-02	6.2E-02	8.4E-02	No	-6.4E-04	1.01	100.0%	D
MW-23D	T	1.8E-02	1.0E-02	1.9E-02	No	-5.7E-04	1.05	99.8%	D

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

Well	Source/ Tail	Average Conc (mg/L)	Median Conc (mg/L)	Standard Deviation	All Samples "ND" ?	Ln Slope	Coefficient of Variation	Confidence in Trend	Concentration Trend
TRICHLOROETHYLENE (TCE)									
MW-25D	T	1.7E-02	6.7E-03	2.6E-02	No	-7.0E-04	1.51	100.0%	D
MW-26D	T	1.1E-02	3.3E-03	1.2E-02	No	-4.7E-04	1.10	99.6%	D
MW-27D	T	4.9E-02	5.1E-03	7.6E-02	No	-1.2E-03	1.54	100.0%	D
MW-2A	T	6.7E-03	5.9E-03	3.9E-03	No	-2.0E-04	0.58	98.7%	D
MW-2B	T	1.3E-02	1.0E-02	8.6E-03	No	-4.3E-04	0.67	99.9%	D
MW-2C	T	6.1E-03	3.3E-03	7.6E-03	No	-6.9E-04	1.23	100.0%	D
MW-30	T	2.9E-04	2.5E-04	8.3E-05	Yes	-9.0E-05	0.29	97.5%	D
PW-1B	T	1.7E-01	9.1E-02	2.1E-01	No	-7.7E-04	1.25	100.0%	D
MW-19D	T	4.3E-01	1.3E-01	6.7E-01	No	-6.5E-04	1.58	100.0%	D

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); COV = Coefficient of Variation

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# MAROS Mann-Kendall Statistics Summary

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

**Time Period:** 1/19/1995    to    10/20/2010

**Consolidation Period:** Yearly

**Consolidation Type:** Geometric Mean

**Duplicate Consolidation:** Maximum

**ND Values:** 1/2 Detection Limit

**J Flag Values :** Actual Value

Well	Source/ Tail	Number of Samples	Number of Detects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
<b>TRICHLOROETHYLENE (TCE)</b>								
AMW-52C	S	7	0	0.00	-4	66.7%	Yes	S
RAMW-2C	S	9	5	0.67	3	58.0%	No	NT
MW-1A	S	16	16	0.90	-88	100.0%	No	D
MW-1B	S	12	9	2.78	-7	65.6%	No	NT
MW-1C	S	11	3	2.69	10	75.3%	No	NT
AMW-55C	S	7	2	0.20	-1	50.0%	No	S
AMW-55A	S	7	7	1.56	-7	80.9%	No	NT
AMW-54C	S	7	2	0.15	9	88.1%	No	NT
AMW-54A	S	8	8	1.35	-12	91.1%	No	PD
AMW-53C	S	7	1	0.06	-9	88.1%	No	S
AMW-53A	S	8	8	1.73	-14	94.6%	No	PD
AMW-52A	S	8	7	0.80	-16	96.9%	No	D
AMW-4A	S	7	3	0.35	-16	99.0%	No	D
AMW-3A	S	16	16	0.96	-84	100.0%	No	D
AMW-2B	S	12	11	1.87	-10	72.7%	No	NT
AMW-1A	S	16	16	1.50	-72	100.0%	No	D
AMW-53B	S	7	7	0.65	-13	96.5%	No	D
AMW-13A	S	16	14	1.95	-23	83.6%	No	NT
AMW-2A	S	16	16	1.16	-100	100.0%	No	D
AMW-12A	S	16	16	1.48	-94	100.0%	No	D
AMW-19A	S	14	14	1.34	-57	99.9%	No	D
AMW-19B	S	8	7	0.59	4	64.0%	No	NT
AMW-1B	S	12	11	2.82	-28	96.9%	No	D
AMW-1C	S	10	1	2.73	-4	60.3%	No	NT
AMW-26	S	14	12	1.40	-60	100.0%	No	D
AMW-8A	T	15	15	1.69	-105	100.0%	No	D
AMW-56A	T	8	8	2.42	-18	98.4%	No	D
CPU-12	T	15	15	0.49	7	61.5%	No	NT
AMW-61	T	4	4	0.90	-4	83.3%	No	S
CPU-13	T	16	16	1.43	-112	100.0%	No	D
AMW-6A	T	8	5	0.44	4	64.0%	No	NT
AMW-63	T	4	2	0.27	1	50.0%	No	NT
CPU-14	T	16	16	0.63	-81	100.0%	No	D
AMW-11A	T	8	6	0.53	6	72.6%	No	NT
MW-10B	T	16	16	1.58	-44	97.4%	No	D
AMW-14	T	12	11	2.60	-62	100.0%	No	D
AMW-7A	T	13	6	0.55	38	98.9%	No	I
AMW-60	T	2	1	0.00	0	0.0%	No	N/A

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

Well	Source/ Tail	Number of Samples	Number of Dectes	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
TRICHLOROETHYLENE (TCE)								
AMW-59	T	6	6	0.40	-7	86.4%	No	S
AMW-56C	T	7	4	0.27	18	99.7%	No	I
AMW-16	T	14	14	1.20	-90	100.0%	No	D
AMW-17	T	15	15	1.66	-82	100.0%	No	D
AMW-18	T	14	13	1.74	50	99.8%	No	I
MW-10C	T	16	16	1.64	-78	100.0%	No	D
MW-14C	T	16	16	1.66	-98	100.0%	No	D
AMW-45	T	10	0	0.60	17	92.2%	Yes	PI
AMW-44	T	10	0	0.60	17	92.2%	Yes	PI
AMW-43	T	11	0	0.48	13	82.1%	Yes	NT
AMW-42	T	12	12	1.98	-36	99.3%	No	D
AMW-27	T	13	13	0.39	-54	100.0%	No	D
AMW-58	T	4	4	1.04	-6	95.8%	No	D
MW-6A	T	3	1	0.00	0	0.0%	No	N/A
MW-3C	T	6	6	0.44	-14	99.6%	No	D
MW-40	T	6	6	1.40	-11	97.2%	No	D
MW-41	T	12	3	1.02	12	77.0%	No	NT
MW-46	T	11	0	0.48	7	67.6%	Yes	NT
MW-47	T	10	0	0.60	17	92.2%	Yes	PI
MW-48	T	11	0	0.54	19	91.8%	Yes	PI
MW-49	T	10	10	0.82	-27	99.2%	No	D
MW-4A	T	10	10	2.00	9	75.8%	No	NT
MW-4B	T	8	8	2.37	0	45.2%	No	NT
MW-12C	T	16	16	2.53	-100	100.0%	No	D
MW-4C	T	5	5	0.66	-6	88.3%	No	S
MW-37	T	11	0	0.48	3	56.0%	Yes	NT
MW-6B	T	16	16	1.32	-68	99.9%	No	D
MW-6C	T	8	8	0.69	-14	94.6%	No	PD
MW-6D	T	6	6	0.63	-13	99.2%	No	D
MW-7B	T	5	5	0.97	-8	95.8%	No	D
MW-7C	T	5	5	1.64	-10	99.2%	No	D
MW-8B	T	8	8	1.77	-26	100.0%	No	D
MW-9B	T	9	9	1.44	-34	100.0%	No	D
MW-9C	T	6	6	1.53	-15	99.9%	No	D
PW-1B	T	16	16	1.25	-78	100.0%	No	D
MW-4BSHED	T	8	8	1.43	-22	99.8%	No	D
MW-23D	T	16	16	1.05	-84	100.0%	No	D
MW-13C	T	16	16	0.77	-84	100.0%	No	D
MW-14E	T	16	16	1.63	-114	100.0%	No	D
MW-15E	T	11	11	1.87	-55	100.0%	No	D
MW-16E	T	11	10	0.78	18	90.5%	No	PI
MW-17E	T	4	3	0.68	-4	83.3%	No	S
MW-18D	T	16	16	1.48	-106	100.0%	No	D
MW-18E	T	15	15	1.04	-67	100.0%	No	D
MW-19D	T	16	16	1.58	-92	100.0%	No	D
MW-20D	T	16	16	1.33	-112	100.0%	No	D
MW-3B	T	9	9	0.91	-24	99.4%	No	D
MW-22D	T	16	16	1.01	-108	100.0%	No	D
MW-3A	T	11	10	0.65	-3	56.0%	No	S
MW-25D	T	16	16	1.51	-101	100.0%	No	D
MW-26D	T	16	16	1.10	-64	99.8%	No	D

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

Well	Source/ Tail	Number of Samples	Number of Dectects	Coefficient of Variation	Mann-Kendall Statistic	Confidence in Trend	All Samples "ND" ?	Concentration Trend
TRICHLOROETHYLENE (TCE)								
MW-27D	T	16	16	1.54	-91	100.0%	No	D
MW-2A	T	13	13	0.58	-36	98.5%	No	D
MW-2B	T	10	10	0.67	-31	99.8%	No	D
MW-2C	T	7	7	1.23	-19	99.9%	No	D
MW-30	T	9	0	0.29	-20	97.8%	Yes	D
MW-31	T	13	13	2.03	-74	100.0%	No	D
MW-35	T	12	12	1.63	-16	84.5%	No	NT
AMW-10A	T	7	5	0.49	-5	71.9%	No	S
MW-21D	T	16	16	1.85	-120	100.0%	No	D

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A)- Due to insufficient Data (< 4 sampling events); Source/Tail (S/T)

The Number of Samples and Number of Dectects shown above are post-consolidation values.

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# MAROS Power Analysis for Individual Well Cleanup Status

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

**From Period:** 1/19/1995    **to** 10/20/2010

Well	Sample Size	Sample Mean	Sample Stdev.	Normal Distribution Assumption Cleanup Status	Lognormal Distribution Assumption Cleanup Status	Alpha Level	Expected Power
<b>TRICHLOROETHYLENE (TCE)</b>		Cleanup Goal (mg/L) = 0.005				Target Level (mg/L) = 0.004	
AMW-10A	7	3.58E-04	1.79E-04	Attained	Cont Sampling	0.05	0.8
AMW-11A	8	5.09E-04	2.81E-04	Attained	Cont Sampling	0.05	0.8
AMW-12A	16	1.98E+00	3.13E+00	Cont Sampling	Cont Sampling	0.05	0.8
AMW-13A	16	5.48E-03	1.12E-02	Cont Sampling	Cont Sampling	0.05	0.8
AMW-14	12	3.22E-02	8.82E-02	Cont Sampling	Cont Sampling	0.05	0.8
AMW-16	14	2.23E-02	2.68E-02	Cont Sampling	Cont Sampling	0.05	0.8
AMW-17	15	9.46E-03	1.48E-02	Cont Sampling	Cont Sampling	0.05	0.8
AMW-18	14	8.95E-02	1.55E-01	Cont Sampling	Cont Sampling	0.05	0.8
AMW-19A	14	9.88E-02	1.24E-01	Cont Sampling	Cont Sampling	0.05	0.8
AMW-19B	8	4.18E-04	2.35E-04	Attained	Cont Sampling	0.05	0.8
AMW-1A	16	1.78E-01	2.57E-01	Cont Sampling	Cont Sampling	0.05	0.8
AMW-1B	12	4.84E-03	1.42E-02	Cont Sampling	Cont Sampling	0.05	0.8
AMW-1C	10	4.07E-03	1.21E-02	Cont Sampling	Cont Sampling	0.05	0.8
AMW-26	14	1.87E-02	2.51E-02	Cont Sampling	Cont Sampling	0.05	0.8
AMW-27	13	4.99E-02	1.90E-02	Cont Sampling	Not Attained	0.05	0.8
AMW-2A	16	1.31E+00	1.49E+00	Cont Sampling	Cont Sampling	0.05	0.8
AMW-2B	12	2.03E-03	4.72E-03	Cont Sampling	Cont Sampling	0.05	0.8
AMW-3A	16	6.70E-03	6.55E-03	Cont Sampling	Cont Sampling	0.05	0.8
AMW-42	12	5.19E-03	1.09E-02	Cont Sampling	Cont Sampling	0.05	0.8
AMW-43	11	2.05E-04	9.91E-05	Attained	Cont Sampling	0.05	0.8
AMW-44	10	1.93E-04	1.02E-04	Attained	Cont Sampling	0.05	0.8
AMW-45	10	1.93E-04	1.02E-04	Attained	Cont Sampling	0.05	0.8
AMW-4A	7	3.09E-04	1.47E-04	Attained	Cont Sampling	0.05	0.8
AMW-52A	8	1.26E-03	2.51E-03	Cont Sampling	Cont Sampling	0.05	0.8
AMW-52C	7	2.50E-04	0.00E+00	Attained	Attained	0.05	0.8
AMW-53A	8	5.21E-02	8.14E-02	Cont Sampling	Cont Sampling	0.05	0.8
AMW-53B	7	1.25E-03	8.02E-04	Attained	Cont Sampling	0.05	0.8
AMW-53C	7	2.44E-04	1.51E-05	Attained	Attained	0.05	0.8
AMW-54A	8	4.53E-02	6.12E-02	Cont Sampling	Cont Sampling	0.05	0.8
AMW-54C	7	2.67E-04	4.11E-05	Attained	Attained	0.05	0.8
AMW-55A	7	1.01E-02	1.49E-02	Cont Sampling	Cont Sampling	0.05	0.8
AMW-55C	7	2.67E-04	5.47E-05	Attained	Attained	0.05	0.8

**Project:** Boomsnub/Airco Superfund Site

**Location:** Hazel Dell

**User Name:**

**State:** Washington

Well	Sample Szie	Sample Mean	Sample Stdev.	Normal Distribution Assumption Cleanup Status	Lognormal Distribution Assumption Cleanup Status	Alpha Level	Expected Power
<b>TRICHLOROETHYLENE (TCE)</b>		Cleanup Goal (mg/L) = 0.005			Target Level (mg/L) = 0.004		
AMW-56A	8	9.30E-02	2.13E-01	Cont Sampling	Cont Sampling	0.05	0.8
AMW-56C	7	2.73E-04	7.41E-05	Attained	Cont Sampling	0.05	0.8
AMW-58	4	2.04E-03	2.33E-03	Cont Sampling	Cont Sampling	0.05	0.8
AMW-59	6	1.41E-01	5.83E-02	Cont Sampling	Not Attained	0.05	0.8
AMW-60	2	5.40E-04	4.10E-04	N/C	N/C	0.05	0.8
AMW-61	4	1.93E-02	1.74E-02	Cont Sampling	Cont Sampling	0.05	0.8
AMW-63	4	2.16E-04	5.50E-05	Attained	Cont Sampling	0.05	0.8
AMW-6A	8	4.78E-04	2.10E-04	Attained	Cont Sampling	0.05	0.8
AMW-7A	13	3.49E-04	1.96E-04	Attained	Cont Sampling	0.05	0.8
AMW-8A	15	9.68E-02	1.59E-01	Cont Sampling	Cont Sampling	0.05	0.8
CPU-12	15	4.75E-03	2.22E-03	Cont Sampling	Cont Sampling	0.05	0.8
CPU-13	16	2.35E-02	3.19E-02	Cont Sampling	Cont Sampling	0.05	0.8
CPU-14	16	2.70E-02	1.69E-02	Cont Sampling	Not Attained	0.05	0.8
MW-10B	16	1.31E-01	2.09E-01	Cont Sampling	Not Attained	0.05	0.8
MW-10C	16	2.15E-01	3.39E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-12C	16	8.82E-01	2.16E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-13C	16	9.21E-03	7.10E-03	Cont Sampling	Not Attained	0.05	0.8
MW-14C	16	2.99E-01	5.05E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-14E	16	1.02E+00	1.64E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-15E	11	1.71E-01	3.18E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-16E	11	2.58E-03	1.91E-03	Attained	Cont Sampling	0.05	0.8
MW-17E	4	4.31E-04	2.89E-04	Attained	Cont Sampling	0.05	0.8
MW-18D	16	1.06E+00	1.54E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-18E	15	7.19E-01	7.49E-01	Cont Sampling	Not Attained	0.05	0.8
MW-19D	16	4.47E-01	7.14E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-1A	16	1.35E+00	1.20E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-1B	12	7.11E-03	2.36E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-1C	11	4.42E-03	1.40E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-20D	16	9.46E-01	1.25E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-21D	16	3.23E-01	6.00E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-22D	16	8.56E-02	8.70E-02	Cont Sampling	Not Attained	0.05	0.8
MW-23D	16	1.99E-02	1.91E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-25D	16	1.85E-02	2.82E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-26D	16	1.13E-02	1.24E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-27D	16	5.10E-02	7.69E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-2A	13	7.09E-03	4.35E-03	Cont Sampling	Not Attained	0.05	0.8

**Project:** Boomsnub/Airco Superfund Site

**Location:** Hazel Dell

**User Name:**

**State:** Washington

Well	Sample Szie	Sample Mean	Sample Stdev.	Normal Distribution Assumption Cleanup Status	Lognormal Distribution Assumption Cleanup Status	Alpha Level	Expected Power
<b>TRICHLOROETHYLENE (TCE)</b>		Cleanup Goal (mg/L) = 0.005			Target Level (mg/L) = 0.004		
MW-2B	10	1.32E-02	8.79E-03	Cont Sampling	Not Attained	0.05	0.8
MW-2C	7	6.72E-03	9.00E-03	Cont Sampling	Cont Sampling	0.05	0.8
MW-30	9	2.95E-04	8.41E-05	Attained	Attained	0.05	0.8
MW-31	13	3.06E-03	6.35E-03	Cont Sampling	Cont Sampling	0.05	0.8
MW-35	12	1.45E-02	2.02E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-37	11	2.05E-04	9.91E-05	Attained	Cont Sampling	0.05	0.8
MW-3A	11	8.76E-04	5.73E-04	Attained	Cont Sampling	0.05	0.8
MW-3B	9	1.05E-02	9.52E-03	Cont Sampling	Cont Sampling	0.05	0.8
MW-3C	6	9.08E-03	4.22E-03	Cont Sampling	Cont Sampling	0.05	0.8
MW-40	6	9.47E-03	1.32E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-41	12	8.64E-04	1.25E-03	Cont Sampling	Cont Sampling	0.05	0.8
MW-46	11	2.05E-04	9.91E-05	Attained	Cont Sampling	0.05	0.8
MW-47	10	1.93E-04	1.02E-04	Attained	Cont Sampling	0.05	0.8
MW-48	11	2.00E-04	9.81E-05	Attained	Cont Sampling	0.05	0.8
MW-49	10	1.07E-02	7.29E-03	Cont Sampling	Cont Sampling	0.05	0.8
MW-4A	10	2.53E-02	4.52E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-4B	8	7.14E-02	1.69E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-4BSHED	8	4.37E-02	6.27E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-4C	5	2.42E-02	1.60E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-6A	3	6.73E-03	1.13E-02	N/C	N/C	0.05	0.8
MW-6B	16	2.29E-01	2.81E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-6C	8	3.21E-02	2.22E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-6D	6	1.96E-02	1.36E-02	Cont Sampling	Cont Sampling	0.05	0.8
MW-7B	5	1.92E-01	2.24E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-7C	5	4.69E-03	7.90E-03	Cont Sampling	Cont Sampling	0.05	0.8
MW-8B	8	6.03E-01	1.05E+00	Cont Sampling	Cont Sampling	0.05	0.8
MW-9B	9	4.05E-01	5.82E-01	Cont Sampling	Cont Sampling	0.05	0.8
MW-9C	6	4.42E-01	6.57E-01	Cont Sampling	Cont Sampling	0.05	0.8
PW-1B	16	1.73E-01	2.14E-01	Cont Sampling	Cont Sampling	0.05	0.8
RAMW-2C	9	3.27E-04	2.18E-04	Attained	Attained	0.05	0.8

Note: N/C refers to "not conducted" because of insufficient data (N<4); S/E indicates the sample mean significantly exceeds the cleanup level and thus no analysis is conducted; Sample Size is the number of concentration data in a sampling location that are used in the analysis; The Target Level is the expected mean concentration in wells after cleanup attainment, it is only used in individual well cleanup status evaluation. The test for evaluating attainment status is from EPA (1992). Refer to Appendix A.6 of MAROS Manual for details.

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# Individual Well Cleanup Status - Optional Analysis Results

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

**From Period:** 1/19/1995    **to** 10/20/2010

Well	Sample Size	Sample Mean	Sample Stdev.	Normal Distribution Assumption			Lognormal Distribution Assumption		
				Significantly < Cleanup Goal?	Power	Expected Sample Size	Significantly < Cleanup Goal?	Power	Expected Sample Size
<b>TRICHLOROETHYLENE (TCE)</b>				Cleanup Goal (mg/L) = 0.005				Alpha Level = 0.05	
AMW-10A	7	3.58E-04	1.79E-04	YES	1.000	<=3	YES	1.000	<=3
AMW-11A	8	5.09E-04	2.81E-04	YES	1.000	<=3	YES	1.000	<=3
AMW-12A	16	1.98E+00	3.13E+00	NO	S/E	S/E	NO	S/E	S/E
AMW-13A	16	5.48E-03	1.12E-02	NO	S/E	S/E	NO	S/E	S/E
AMW-14	12	3.22E-02	8.82E-02	NO	S/E	S/E	NO	S/E	S/E
AMW-16	14	2.23E-02	2.68E-02	NO	S/E	S/E	NO	S/E	S/E
AMW-17	15	9.46E-03	1.48E-02	NO	S/E	S/E	NO	S/E	S/E
AMW-18	14	8.95E-02	1.55E-01	NO	S/E	S/E	NO	S/E	S/E
AMW-19A	14	9.88E-02	1.24E-01	NO	S/E	S/E	NO	S/E	S/E
AMW-19B	8	4.18E-04	2.35E-04	YES	1.000	<=3	YES	1.000	<=3
AMW-1A	16	1.78E-01	2.57E-01	NO	S/E	S/E	NO	S/E	S/E
AMW-1B	12	4.84E-03	1.42E-02	NO	0.054	>100	YES	0.553	23
AMW-1C	10	4.07E-03	1.21E-02	NO	0.079	>100	YES	0.749	12
AMW-26	14	1.87E-02	2.51E-02	NO	S/E	S/E	NO	S/E	S/E
AMW-27	13	4.99E-02	1.90E-02	NO	S/E	S/E	NO	S/E	S/E
AMW-2A	16	1.31E+00	1.49E+00	NO	S/E	S/E	NO	S/E	S/E
AMW-2B	12	2.03E-03	4.72E-03	YES	0.680	17	YES	0.968	7
AMW-3A	16	6.70E-03	6.55E-03	NO	S/E	S/E	NO	S/E	S/E
AMW-42	12	5.19E-03	1.09E-02	NO	S/E	S/E	NO	0.073	>100
AMW-43	11	2.05E-04	9.91E-05	YES	1.000	<=3	YES	1.000	4
AMW-44	10	1.93E-04	1.02E-04	YES	1.000	<=3	YES	0.999	4
AMW-45	10	1.93E-04	1.02E-04	YES	1.000	<=3	YES	0.999	4
AMW-4A	7	3.09E-04	1.47E-04	YES	1.000	<=3	YES	1.000	<=3
AMW-52A	8	1.26E-03	2.51E-03	YES	0.991	4	YES	0.925	6
AMW-52C	7	2.50E-04	0.00E+00	YES	1.000	<=3	YES	1.000	<=3
AMW-53A	8	5.21E-02	8.14E-02	NO	S/E	S/E	NO	S/E	S/E
AMW-53B	7	1.25E-03	8.02E-04	YES	1.000	<=3	YES	0.999	<=3
AMW-53C	7	2.44E-04	1.51E-05	YES	1.000	<=3	YES	1.000	<=3
AMW-54A	8	4.53E-02	6.12E-02	NO	S/E	S/E	NO	S/E	S/E
AMW-54C	7	2.67E-04	4.11E-05	YES	1.000	<=3	YES	1.000	<=3
AMW-55A	7	1.01E-02	1.49E-02	NO	S/E	S/E	NO	S/E	S/E
AMW-55C	7	2.67E-04	5.47E-05	YES	1.000	<=3	YES	1.000	<=3

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

Well	Sample Szie	Sample Mean	Sample Stdev.	Normal Distribution Assumption			Lognormal Distribution Assumption						
				Significantly < Cleanup Goal?	Power	Expected Sample Size	Significantly < Cleanup Goal?	Power	Expected Sample Size				
<b>TRICHLOROETHYLENE (TCE)</b>				Cleanup Goal (mg/L) = 0.005				Alpha Level = 0.05		Expected Power = 0.8			
AMW-56A	8	9.30E-02	2.13E-01	NO	S/E	S/E	NO	S/E	S/E				
AMW-56C	7	2.73E-04	7.41E-05	YES	1.000	<=3	YES	1.000	<=3				
AMW-58	4	2.04E-03	2.33E-03	YES	0.736	5	NO	0.131	74				
AMW-59	6	1.41E-01	5.83E-02	NO	S/E	S/E	NO	S/E	S/E				
AMW-60	2	5.40E-04	4.10E-04	N/C	N/C	N/C	N/C	N/C	N/C				
AMW-61	4	1.93E-02	1.74E-02	NO	S/E	S/E	NO	S/E	S/E				
AMW-63	4	2.16E-04	5.50E-05	YES	1.000	<=3	YES	1.000	<=3				
AMW-6A	8	4.78E-04	2.10E-04	YES	1.000	<=3	YES	1.000	<=3				
AMW-7A	13	3.49E-04	1.96E-04	YES	1.000	<=3	YES	1.000	<=3				
AMW-8A	15	9.68E-02	1.59E-01	NO	S/E	S/E	NO	S/E	S/E				
CPU-12	15	4.75E-03	2.22E-03	NO	0.110	>100	NO	0.131	>100				
CPU-13	16	2.35E-02	3.19E-02	NO	S/E	S/E	NO	S/E	S/E				
CPU-14	16	2.70E-02	1.69E-02	NO	S/E	S/E	NO	S/E	S/E				
MW-10B	16	1.31E-01	2.09E-01	NO	S/E	S/E	NO	S/E	S/E				
MW-10C	16	2.15E-01	3.39E-01	NO	S/E	S/E	NO	S/E	S/E				
MW-12C	16	8.82E-01	2.16E+00	NO	S/E	S/E	NO	S/E	S/E				
MW-13C	16	9.21E-03	7.10E-03	NO	S/E	S/E	NO	S/E	S/E				
MW-14C	16	2.99E-01	5.05E-01	NO	S/E	S/E	NO	S/E	S/E				
MW-14E	16	1.02E+00	1.64E+00	NO	S/E	S/E	NO	S/E	S/E				
MW-15E	11	1.71E-01	3.18E-01	NO	S/E	S/E	NO	S/E	S/E				
MW-16E	11	2.58E-03	1.91E-03	YES	0.992	5	NO	0.340	43				
MW-17E	4	4.31E-04	2.89E-04	YES	1.000	<=3	YES	1.000	<=3				
MW-18D	16	1.06E+00	1.54E+00	NO	S/E	S/E	NO	S/E	S/E				
MW-18E	15	7.19E-01	7.49E-01	NO	S/E	S/E	NO	S/E	S/E				
MW-19D	16	4.47E-01	7.14E-01	NO	S/E	S/E	NO	S/E	S/E				
MW-1A	16	1.35E+00	1.20E+00	NO	S/E	S/E	NO	S/E	S/E				
MW-1B	12	7.11E-03	2.36E-02	NO	S/E	S/E	YES	0.597	21				
MW-1C	11	4.42E-03	1.40E-02	NO	0.065	>100	NO	0.343	42				
MW-20D	16	9.46E-01	1.25E+00	NO	S/E	S/E	NO	S/E	S/E				
MW-21D	16	3.23E-01	6.00E-01	NO	S/E	S/E	NO	S/E	S/E				
MW-22D	16	8.56E-02	8.70E-02	NO	S/E	S/E	NO	S/E	S/E				
MW-23D	16	1.99E-02	1.91E-02	NO	S/E	S/E	NO	S/E	S/E				
MW-25D	16	1.85E-02	2.82E-02	NO	S/E	S/E	NO	S/E	S/E				
MW-26D	16	1.13E-02	1.24E-02	NO	S/E	S/E	NO	S/E	S/E				
MW-27D	16	5.10E-02	7.69E-02	NO	S/E	S/E	NO	S/E	S/E				
MW-2A	13	7.09E-03	4.35E-03	NO	S/E	S/E	NO	S/E	S/E				

**Project:** Boomsnub/Airco Superfund Site**User Name:****Location:** Hazel Dell**State:** Washington

Well	Sample Szie	Sample Mean	Sample Stdev.	Normal Distribution Assumption			Lognormal Distribution Assumption						
				Significantly < Cleanup Goal?	Power	Expected Sample Size	Significantly < Cleanup Goal?	Power	Expected Sample Size				
<b>TRICHLOROETHYLENE (TCE)</b>				Cleanup Goal (mg/L) = 0.005				Alpha Level = 0.05		Expected Power = 0.8			
MW-2B	10	1.32E-02	8.79E-03	NO	S/E	S/E	NO	S/E	S/E				
MW-2C	7	6.72E-03	9.00E-03	NO	S/E	S/E	NO	S/E	S/E				
MW-30	9	2.95E-04	8.41E-05	YES	1.000	<=3	YES	1.000	<=3				
MW-31	13	3.06E-03	6.35E-03	NO	0.282	68	NO	0.482	31				
MW-35	12	1.45E-02	2.02E-02	NO	S/E	S/E	NO	S/E	S/E				
MW-37	11	2.05E-04	9.91E-05	YES	1.000	<=3	YES	1.000	4				
MW-3A	11	8.76E-04	5.73E-04	YES	1.000	<=3	YES	1.000	<=3				
MW-3B	9	1.05E-02	9.52E-03	NO	S/E	S/E	NO	S/E	S/E				
MW-3C	6	9.08E-03	4.22E-03	NO	S/E	S/E	NO	S/E	S/E				
MW-40	6	9.47E-03	1.32E-02	NO	S/E	S/E	NO	S/E	S/E				
MW-41	12	8.64E-04	1.25E-03	YES	1.000	<=3	NO	0.394	38				
MW-46	11	2.05E-04	9.91E-05	YES	1.000	<=3	YES	1.000	4				
MW-47	10	1.93E-04	1.02E-04	YES	1.000	<=3	YES	0.999	4				
MW-48	11	2.00E-04	9.81E-05	YES	1.000	<=3	YES	1.000	4				
MW-49	10	1.07E-02	7.29E-03	NO	S/E	S/E	NO	S/E	S/E				
MW-4A	10	2.53E-02	4.52E-02	NO	S/E	S/E	NO	S/E	S/E				
MW-4B	8	7.14E-02	1.69E-01	NO	S/E	S/E	NO	S/E	S/E				
MW-4BSHED	8	4.37E-02	6.27E-02	NO	S/E	S/E	NO	S/E	S/E				
MW-4C	5	2.42E-02	1.60E-02	NO	S/E	S/E	NO	S/E	S/E				
MW-6A	3	6.73E-03	1.13E-02	N/C	S/E	S/E	N/C	S/E	S/E				
MW-6B	16	2.29E-01	2.81E-01	NO	S/E	S/E	NO	S/E	S/E				
MW-6C	8	3.21E-02	2.22E-02	NO	S/E	S/E	NO	S/E	S/E				
MW-6D	6	1.96E-02	1.36E-02	NO	S/E	S/E	NO	S/E	S/E				
MW-7B	5	1.92E-01	2.24E-01	NO	S/E	S/E	NO	S/E	S/E				
MW-7C	5	4.69E-03	7.90E-03	NO	0.059	>100	NO	S/E	S/E				
MW-8B	8	6.03E-01	1.05E+00	NO	S/E	S/E	NO	S/E	S/E				
MW-9B	9	4.05E-01	5.82E-01	NO	S/E	S/E	NO	S/E	S/E				
MW-9C	6	4.42E-01	6.57E-01	NO	S/E	S/E	NO	S/E	S/E				
PW-1B	16	1.73E-01	2.14E-01	NO	S/E	S/E	NO	S/E	S/E				
RAMW-2C	9	3.27E-04	2.18E-04	YES	1.000	<=3	YES	1.000	<=3				

Note: N/C refers to "not conducted" because of insufficient data (N<4); S/E indicates the sample mean significantly exceeds the cleanup level and thus no analysis is conducted; Sample Size is the number of concentration data in a sampling location that are used in the power analysis; Expected Sample Size is the number of concentration data needed to reach the Expected Power under current sample variability; The Target Level is the expected mean concentration in wells after cleanup attainment, it is only used in individual well cleanup status evaluation. The Student's t-test on mean difference is used in this analysis. Refer to Appendix A.6 of MAROS Manual for details.

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# MAROS Sampling Frequency Optimization Results

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

**The Overall Number of Sampling Events:** 287

"Recent Period" defined by events: From Sample Event 1 To Sample Event 287  
1/19/1995 10/20/2010

"Rate of Change" parameters used:

Constituent	Cleanup Goal	Low Rate	Medium Rate	High Rate
TRICHLOROETHYLENE (TCE)	0.005	0.0025	0.005	0.01

Units: Cleanup Goal is in mg/L; all rate parameters are in mg/L/year.

Well	Recommended Sampling Frequency	Frequency Based on Recent Data	Frequency Based on Overall Data
TRICHLOROETHYLENE (TCE)			
AMW-10A	Biennial	Annual	Annual
AMW-11A	Biennial	Annual	Annual
AMW-12A	Annual	Annual	Annual
AMW-13A	Annual	Annual	Annual
AMW-14	Annual	Annual	Annual
AMW-16	Annual	Annual	Annual
AMW-17	Annual	Annual	Annual
AMW-18	Quarterly	Quarterly	Quarterly
AMW-19A	Annual	Annual	Annual
AMW-19B	Biennial	Annual	Annual
AMW-1A	Annual	Annual	Annual
AMW-1B	Annual	Annual	Annual
AMW-1C	Annual	Annual	Annual
AMW-26	Annual	Annual	Annual
AMW-27	Annual	Annual	Annual
AMW-2A	Annual	Annual	Annual
AMW-2B	Annual	Annual	Annual
AMW-3A	Annual	Annual	Annual
AMW-42	Annual	Annual	Annual
AMW-43	Annual	Annual	Annual
AMW-44	Annual	Annual	Annual
AMW-45	Annual	Annual	Annual
AMW-4A	Biennial	Annual	Annual
AMW-52A	Annual	Annual	Annual

**Project:** Boomsnub/Airco Superfund Site

**Location:** Hazel Dell

**User Name:**

**State:** Washington

Well	Recommended Sampling Frequency	Frequency Based on Recent Data	Frequency Based on Overall Data
AMW-52C	Biennial	Annual	Annual
AMW-53A	Annual	Annual	Annual
AMW-53B	Annual	Annual	Annual
AMW-53C	Biennial	Annual	Annual
AMW-54A	Annual	Annual	Annual
AMW-54C	Biennial	Annual	Annual
AMW-55A	Annual	Annual	Annual
AMW-55C	Biennial	Annual	Annual
AMW-56A	Annual	Annual	Annual
AMW-56C	Annual	Annual	Annual
AMW-58	Annual	Annual	Annual
AMW-59	Annual	Annual	Annual
AMW-60	Annual	Annual	Annual
AMW-61	Annual	Annual	Annual
AMW-63	Biennial	Annual	Annual
AMW-6A	Biennial	Annual	Annual
AMW-7A	Annual	Annual	Annual
AMW-8A	Annual	Annual	Annual
CPU-12	Annual	Annual	Annual
CPU-13	Annual	Annual	Annual
CPU-14	Annual	Annual	Annual
MW-10B	Annual	Annual	Annual
MW-10C	Annual	Annual	Annual
MW-12C	Annual	Annual	Annual
MW-13C	Annual	Annual	Annual
MW-14C	Annual	Annual	Annual
MW-14E	Annual	Annual	Annual
MW-15E	Annual	Annual	Annual
MW-16E	Annual	Annual	Annual
MW-17E	Biennial	Annual	Annual
MW-18D	Annual	Annual	Annual
MW-18E	Annual	Annual	Annual
MW-19D	Annual	Annual	Annual
MW-1A	Annual	Annual	Annual
MW-1B	Annual	Annual	Annual
MW-1C	Annual	Annual	Annual
MW-20D	Annual	Annual	Annual
MW-21D	Annual	Annual	Annual

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

Well	Recommended Sampling Frequency	Frequency Based on Recent Data	Frequency Based on Overall Data
MW-22D	Annual	Annual	Annual
MW-23D	Annual	Annual	Annual
MW-25D	Annual	Annual	Annual
MW-26D	Annual	Annual	Annual
MW-27D	Annual	Annual	Annual
MW-2A	Annual	Annual	Annual
MW-2B	Annual	Annual	Annual
MW-2C	Annual	Annual	Annual
MW-30	Biennial	Annual	Annual
MW-31	Annual	Annual	Annual
MW-35	Annual	Annual	Annual
MW-37	Biennial	Annual	Annual
MW-3A	Biennial	Annual	Annual
MW-3B	Annual	Annual	Annual
MW-3C	Annual	Annual	Annual
MW-40	Annual	Annual	Annual
MW-41	Annual	Annual	Annual
MW-46	Annual	Annual	Annual
MW-47	Annual	Annual	Annual
MW-48	Annual	Annual	Annual
MW-49	Annual	Annual	Annual
MW-4A	Annual	Annual	Annual
MW-4B	Annual	Annual	Annual
MW-4BSHED	Annual	Annual	Annual
MW-4C	Annual	Annual	Annual
MW-6A	Quarterly	Quarterly	Quarterly
MW-6B	Annual	Annual	Annual
MW-6C	Annual	Annual	Annual
MW-6D	Annual	Annual	Annual
MW-7B	Annual	Annual	Annual
MW-7C	Annual	Annual	Annual
MW-8B	Annual	Annual	Annual
MW-9B	Annual	Annual	Annual
MW-9C	Annual	Annual	Annual
PW-1B	Annual	Annual	Annual
RAMW-2C	Biennial	Annual	Annual

**Project:** Boomsnub/Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

Well	Recommended Sampling Frequency	Frequency Based on Recent Data	Frequency Based on Overall Data
------	--------------------------------	--------------------------------	---------------------------------

Note: Sampling frequency is determined considering both recent and overall concentration trends. Sampling Frequency is the final recommendation; Frequency Based on Recent Data is the frequency determined using recent (short) period of monitoring data; Frequency Based on Overall Data is the frequency determined using overall (long) period of monitoring data. If the "recent period" is defined using a different series of sampling events, the results could be different.

# MAROS Sampling Location Optimization Result

**Project:** Boomsnub Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

**Sampling Events Analyzed:** From Sample Event 1 to Sample Event 287  
1/19/1995 10/20/2010

**Parameters used:**

Constituent	Inside SF	Hull SF	Area Ratio	Conc. Ratio
TRICHLOROETHYLENE (TCE)	0.1	0.01	0.95	0.95

Well	X (feet)	Y (feet)	Removable?	Average Slope Factor*	Minimum Slope Factor*	Maximum Slope Factor*	Eliminated?
TRICHLOROETHYLENE (TCE)							
AMW-10A	1098266.25	132923.33	<input checked="" type="checkbox"/>	0.448	0.000	0.718	<input type="checkbox"/>
AMW-11A	1098270.63	132756.36	<input checked="" type="checkbox"/>	0.234	0.000	0.704	<input type="checkbox"/>
AMW-12A	1097891.63	132766.36	<input checked="" type="checkbox"/>	0.504	0.036	0.754	<input type="checkbox"/>
AMW-13A	1097844.38	133039.89	<input checked="" type="checkbox"/>	0.372	0.000	0.860	<input type="checkbox"/>
AMW-14	1095174.75	133490.42	<input checked="" type="checkbox"/>	0.209	0.026	0.471	<input type="checkbox"/>
AMW-16	1095988.00	133665.55	<input checked="" type="checkbox"/>	0.229	0.023	0.601	<input type="checkbox"/>
AMW-17	1096562.13	133519.91	<input checked="" type="checkbox"/>	0.395	0.061	0.730	<input type="checkbox"/>
AMW-18	1096976.25	133403.75	<input checked="" type="checkbox"/>	0.563	0.000	0.858	<input type="checkbox"/>
AMW-19A	1097961.38	132745.06	<input checked="" type="checkbox"/>	0.371	0.016	0.935	<input type="checkbox"/>
AMW-19B	1097957.38	132741.20	<input checked="" type="checkbox"/>	0.702	0.000	0.943	<input type="checkbox"/>
AMW-1A	1097845.25	132893.08	<input checked="" type="checkbox"/>	0.419	0.015	0.784	<input type="checkbox"/>
AMW-1B	1097844.88	132883.34	<input checked="" type="checkbox"/>	0.314	0.000	1.000	<input type="checkbox"/>
AMW-1C	1097852.50	132885.95	<input checked="" type="checkbox"/>	0.553	0.000	0.939	<input type="checkbox"/>
AMW-26	1097846.25	132924.05	<input checked="" type="checkbox"/>	0.328	0.026	0.713	<input type="checkbox"/>
AMW-27	1094386.13	133515.81	<input checked="" type="checkbox"/>	0.301	0.105	0.653	<input type="checkbox"/>
AMW-2A	1097832.00	132820.73	<input checked="" type="checkbox"/>	0.573	0.022	0.838	<input type="checkbox"/>
AMW-2B	1097831.75	132828.42	<input checked="" type="checkbox"/>	0.631	0.201	0.894	<input type="checkbox"/>
AMW-3A	1097892.63	132637.25	<input checked="" type="checkbox"/>	0.412	0.119	0.816	<input type="checkbox"/>
AMW-42	1093570.50	133791.39	<input checked="" type="checkbox"/>	0.493	0.001	0.777	<input type="checkbox"/>
AMW-43	1093380.50	133942.05	<input checked="" type="checkbox"/>	0.172	0.000	0.490	<input type="checkbox"/>
AMW-44	1093381.00	133882.50	<input checked="" type="checkbox"/>	0.115	0.000	0.863	<input type="checkbox"/>
AMW-45	1093385.00	133830.00	<input checked="" type="checkbox"/>	0.203	0.000	0.857	<input type="checkbox"/>
AMW-4A	1097867.00	133145.05	<input checked="" type="checkbox"/>	0.705	0.317	1.000	<input type="checkbox"/>
AMW-52A	1097747.50	132981.05	<input checked="" type="checkbox"/>	0.548	0.028	1.000	<input type="checkbox"/>
AMW-52C	1097747.38	132969.95	<input checked="" type="checkbox"/>	0.496	0.077	0.828	<input type="checkbox"/>
AMW-53A	1097744.75	132910.84	<input checked="" type="checkbox"/>	0.524	0.003	0.776	<input type="checkbox"/>
AMW-53B	1097745.00	132900.84	<input checked="" type="checkbox"/>	0.245	0.008	0.626	<input type="checkbox"/>
AMW-53C	1097744.50	132890.73	<input checked="" type="checkbox"/>	0.679	0.335	0.792	<input type="checkbox"/>

**Project:** Boomsnub Airco Superfund Site

**User Name:**

**Location:** Hazel Dell

**State:** Washington

Well	X (feet)	Y (feet)	Removable?	Average Slope Factor*	Minimum Slope Factor*	Maximum Slope Factor*	Eliminated?
AMW-54A	1097745.50	132769.86	<input checked="" type="checkbox"/>	0.533	0.045	0.874	<input type="checkbox"/>
AMW-54C	1097745.13	132766.69	<input checked="" type="checkbox"/>	0.708	0.348	0.872	<input type="checkbox"/>
AMW-55A	1097744.50	132704.05	<input checked="" type="checkbox"/>	0.418	0.076	0.846	<input type="checkbox"/>
AMW-55C	1097745.13	132713.77	<input checked="" type="checkbox"/>	0.550	0.239	0.816	<input type="checkbox"/>
AMW-56A	1097844.25	132760.16	<input checked="" type="checkbox"/>	0.426	0.036	0.925	<input type="checkbox"/>
AMW-56C	1097844.25	132763.36	<input checked="" type="checkbox"/>	0.562	0.154	0.914	<input type="checkbox"/>
AMW-58	1097533.63	132838.81	<input checked="" type="checkbox"/>	0.614	0.482	0.857	<input type="checkbox"/>
AMW-59	1097015.63	133051.66	<input checked="" type="checkbox"/>	0.395	0.160	0.600	<input type="checkbox"/>
AMW-60	1096157.88	133400.44	<input checked="" type="checkbox"/>	0.656	0.656	0.656	<input type="checkbox"/>
AMW-61	1094367.25	133467.44	<input checked="" type="checkbox"/>	0.144	0.116	0.237	<input type="checkbox"/>
AMW-63	1093510.88	133815.56	<input checked="" type="checkbox"/>	0.686	0.363	1.000	<input type="checkbox"/>
AMW-6A	1098315.50	132581.84	<input checked="" type="checkbox"/>	0.231	0.000	0.641	<input type="checkbox"/>
AMW-7A	1098542.13	132679.81	<input checked="" type="checkbox"/>	0.452	0.000	0.877	<input type="checkbox"/>
AMW-8A	1098555.38	133089.64	<input checked="" type="checkbox"/>	0.275	0.050	0.704	<input type="checkbox"/>
CPU-12	1095433.88	133157.64	<input checked="" type="checkbox"/>	0.367	0.052	1.000	<input type="checkbox"/>
CPU-13	1094877.75	133397.00	<input checked="" type="checkbox"/>	0.179	0.001	0.709	<input type="checkbox"/>
CPU-14	1096130.75	133152.42	<input checked="" type="checkbox"/>	0.214	0.000	0.753	<input type="checkbox"/>
MW-10B	1097254.00	132970.84	<input checked="" type="checkbox"/>	0.222	0.001	0.795	<input type="checkbox"/>
MW-10C	1097250.75	132971.34	<input checked="" type="checkbox"/>	0.224	0.003	0.760	<input type="checkbox"/>
MW-12C	1097182.25	133074.94	<input checked="" type="checkbox"/>	0.274	0.052	0.614	<input type="checkbox"/>
MW-13C	1097114.13	132873.94	<input checked="" type="checkbox"/>	0.285	0.091	0.543	<input type="checkbox"/>
MW-14C	1097053.75	133070.84	<input checked="" type="checkbox"/>	0.145	0.001	0.513	<input type="checkbox"/>
MW-14E	1097068.38	133032.61	<input checked="" type="checkbox"/>	0.185	0.025	0.593	<input type="checkbox"/>
MW-15E	1096785.25	133249.44	<input checked="" type="checkbox"/>	0.244	0.022	0.634	<input type="checkbox"/>
MW-16E	1096698.50	133044.53	<input checked="" type="checkbox"/>	0.584	0.135	1.000	<input type="checkbox"/>
MW-17E	1096564.88	133148.64	<input checked="" type="checkbox"/>	0.792	0.693	0.884	<input type="checkbox"/>
MW-18D	1096779.50	133113.73	<input checked="" type="checkbox"/>	0.209	0.026	0.489	<input type="checkbox"/>
MW-18E	1096799.50	133118.36	<input checked="" type="checkbox"/>	0.323	0.024	0.837	<input type="checkbox"/>
MW-19D	1096403.13	133254.94	<input checked="" type="checkbox"/>	0.108	0.000	0.581	<input type="checkbox"/>
MW-1A	1097744.75	132827.19	<input checked="" type="checkbox"/>	0.608	0.123	0.919	<input type="checkbox"/>
MW-1B	1097744.75	132827.09	<input checked="" type="checkbox"/>	0.675	0.000	0.930	<input type="checkbox"/>
MW-1C	1097744.75	132827.00	<input checked="" type="checkbox"/>	0.392	0.001	0.858	<input type="checkbox"/>
MW-20D	1095961.75	133409.30	<input checked="" type="checkbox"/>	0.193	0.031	0.515	<input type="checkbox"/>
MW-21D	1095484.63	133561.14	<input checked="" type="checkbox"/>	0.174	0.003	0.654	<input type="checkbox"/>
MW-22D	1095455.50	133368.55	<input checked="" type="checkbox"/>	0.136	0.001	0.680	<input type="checkbox"/>
MW-23D	1095517.00	133764.66	<input checked="" type="checkbox"/>	0.250	0.003	0.637	<input type="checkbox"/>
MW-25D	1094389.25	133662.33	<input checked="" type="checkbox"/>	0.380	0.009	0.900	<input type="checkbox"/>
MW-26D	1094375.13	133433.91	<input checked="" type="checkbox"/>	0.461	0.004	0.893	<input type="checkbox"/>

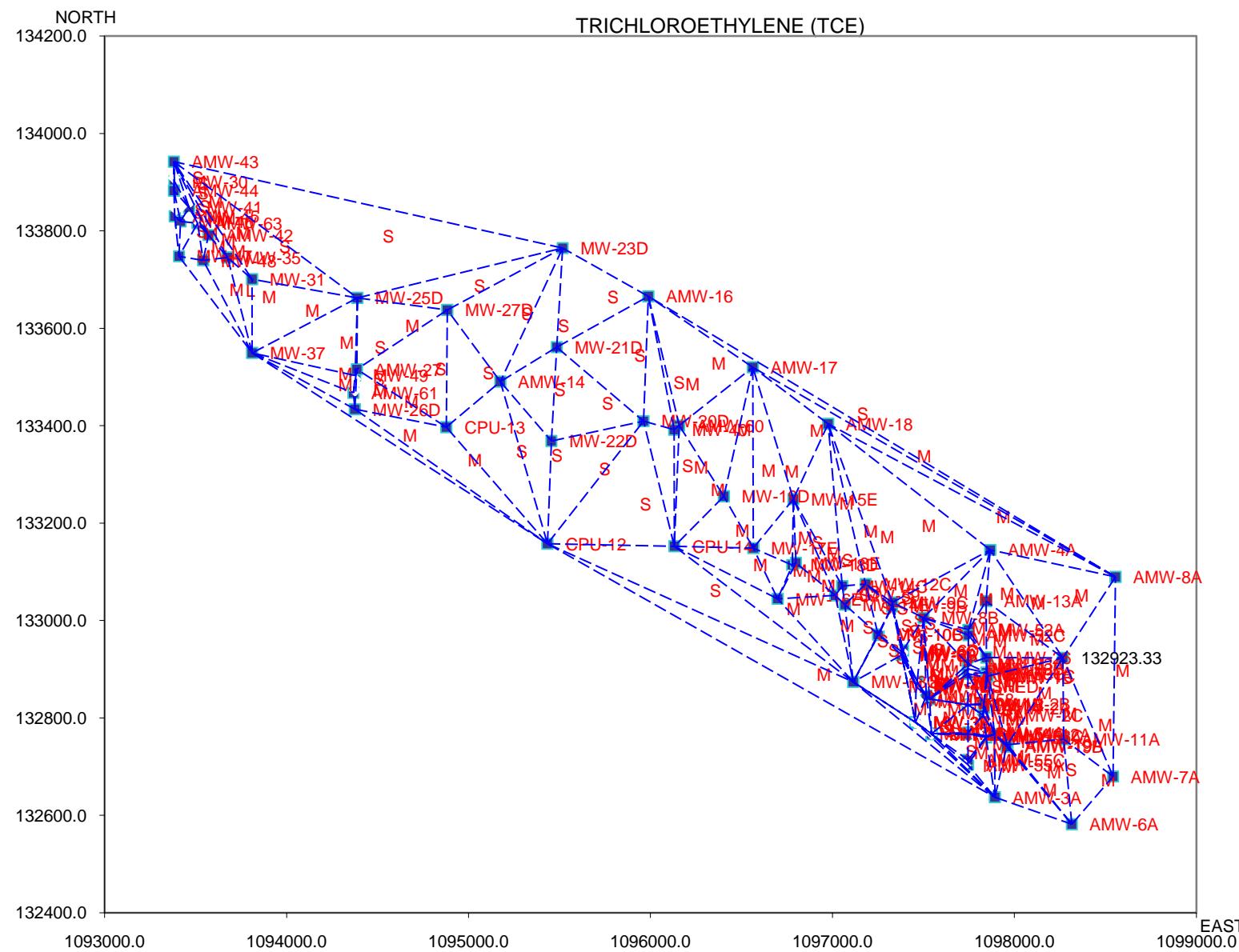
**Project:** Boomsnub Airco Superfund Site**User Name:****Location:** Hazel Dell**State:** Washington

Well	X (feet)	Y (feet)	Removable?	Average Slope Factor*	Minimum Slope Factor*	Maximum Slope Factor*	Eliminated?
MW-27D	1094883.38	133637.58	<input checked="" type="checkbox"/>	0.234	0.011	0.824	<input type="checkbox"/>
MW-2A	1097544.25	132767.69	<input checked="" type="checkbox"/>	0.240	0.000	0.710	<input type="checkbox"/>
MW-2B	1097544.25	132767.59	<input checked="" type="checkbox"/>	0.212	0.011	0.708	<input type="checkbox"/>
MW-2C	1097544.25	132767.00	<input checked="" type="checkbox"/>	0.248	0.072	0.645	<input type="checkbox"/>
MW-30	1093383.63	133901.48	<input checked="" type="checkbox"/>	0.219	0.000	0.845	<input type="checkbox"/>
MW-31	1093810.00	133700.70	<input checked="" type="checkbox"/>	0.320	0.014	0.832	<input type="checkbox"/>
MW-35	1093675.75	133745.42	<input checked="" type="checkbox"/>	0.545	0.056	0.861	<input type="checkbox"/>
MW-37	1093810.38	133549.30	<input checked="" type="checkbox"/>	0.700	0.510	0.850	<input type="checkbox"/>
MW-3A	1097456.25	132791.06	<input checked="" type="checkbox"/>	0.582	0.279	0.914	<input type="checkbox"/>
MW-3B	1097456.25	132791.09	<input checked="" type="checkbox"/>	0.230	0.001	0.914	<input type="checkbox"/>
MW-3C	1097456.25	132791.00	<input checked="" type="checkbox"/>	0.291	0.001	0.915	<input type="checkbox"/>
MW-40	1096129.75	133391.88	<input checked="" type="checkbox"/>	0.199	0.014	0.568	<input type="checkbox"/>
MW-41	1093463.88	133848.02	<input checked="" type="checkbox"/>	0.494	0.000	0.860	<input type="checkbox"/>
MW-46	1093416.88	133819.34	<input checked="" type="checkbox"/>	0.245	0.000	0.855	<input type="checkbox"/>
MW-47	1093408.50	133747.70	<input checked="" type="checkbox"/>	0.311	0.000	0.797	<input type="checkbox"/>
MW-48	1093541.50	133739.28	<input checked="" type="checkbox"/>	0.596	0.179	0.836	<input type="checkbox"/>
MW-49	1094376.50	133503.09	<input checked="" type="checkbox"/>	0.195	0.059	0.876	<input type="checkbox"/>
MW-4A	1097458.00	132868.42	<input checked="" type="checkbox"/>	0.354	0.036	0.798	<input type="checkbox"/>
MW-4B	1097458.00	132868.41	<input checked="" type="checkbox"/>	0.464	0.239	0.620	<input type="checkbox"/>
MW-4BSHED	1097459.00	132864.77	<input checked="" type="checkbox"/>	0.195	0.023	0.492	<input type="checkbox"/>
MW-4C	1097458.00	132868.00	<input checked="" type="checkbox"/>	0.418	0.085	0.731	<input type="checkbox"/>
MW-6A	1097386.13	132930.42	<input checked="" type="checkbox"/>	0.797	0.519	0.924	<input type="checkbox"/>
MW-6B	1097380.50	132929.25	<input checked="" type="checkbox"/>	0.151	0.009	0.753	<input type="checkbox"/>
MW-6C	1097380.50	132935.98	<input checked="" type="checkbox"/>	0.265	0.023	0.552	<input type="checkbox"/>
MW-6D	1097387.88	132938.81	<input checked="" type="checkbox"/>	0.173	0.002	0.473	<input type="checkbox"/>
MW-7B	1097465.63	132874.84	<input checked="" type="checkbox"/>	0.441	0.112	0.685	<input type="checkbox"/>
MW-7C	1097515.63	132845.50	<input checked="" type="checkbox"/>	0.556	0.145	0.825	<input type="checkbox"/>
MW-8B	1097500.63	133005.73	<input checked="" type="checkbox"/>	0.195	0.008	0.519	<input type="checkbox"/>
MW-9B	1097327.25	133029.19	<input checked="" type="checkbox"/>	0.192	0.011	0.637	<input type="checkbox"/>
MW-9C	1097329.13	133037.23	<input checked="" type="checkbox"/>	0.252	0.006	0.748	<input type="checkbox"/>
PW-1B	1097467.75	132870.81	<input checked="" type="checkbox"/>	0.231	0.003	0.780	<input type="checkbox"/>
RAMW-2C	1097827.63	132805.75	<input checked="" type="checkbox"/>	0.711	0.000	0.838	<input type="checkbox"/>

Note: The Slope Factor indicates the relative importance of a well in the monitoring network at a given sampling event; the larger the SF value of a well, the more important the well is and vice versa; the Average Slope Factor measures the overall well importance in the selected time period; the state coordinates system (i.e., X and Y refer to Easting and Northing respectively) or local coordinates systems may be used; wells that are NOT selected for analysis are not shown above.

\* When the report is generated after running the Excel module, SF values will NOT be shown above.

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# MAROS Zeroth Moment Analysis

**Project:** Boomsnub/Airco Superfund Site

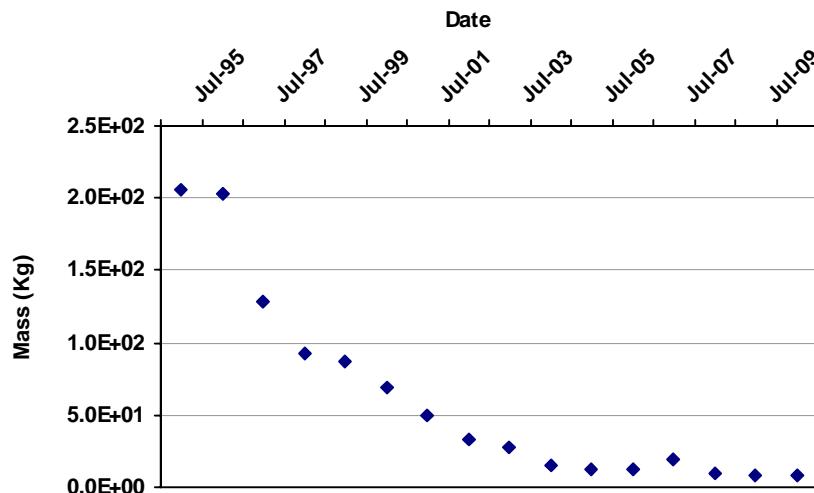
**User Name:**

**Location:** Hazel Dell

**State:** Washington

**COC:** TRICHLOROETHYLENE (TCE)

## Change in Dissolved Mass Over Time



**Porosity:** 0.30

**Saturated Thickness:**

Uniform: 65 ft

**Mann Kendall S Statistic:**

-112

**Confidence in Trend:**

100.0%

**Coefficient of Variation:**

1.08

**Zeroth Moment Trend:**

D

## Data Table:

Effective Date	Constituent	Estimated Mass (Kg)	Number of Wells
7/1/1995	TRICHLOROETHYLENE (TCE)	2.1E+02	62
7/1/1996	TRICHLOROETHYLENE (TCE)	2.0E+02	39
7/1/1997	TRICHLOROETHYLENE (TCE)	1.3E+02	67
7/1/1998	TRICHLOROETHYLENE (TCE)	9.3E+01	60
7/1/1999	TRICHLOROETHYLENE (TCE)	8.7E+01	58
7/1/2000	TRICHLOROETHYLENE (TCE)	6.9E+01	51
7/1/2001	TRICHLOROETHYLENE (TCE)	4.9E+01	57
7/1/2002	TRICHLOROETHYLENE (TCE)	3.2E+01	63
7/1/2003	TRICHLOROETHYLENE (TCE)	2.7E+01	76
7/1/2004	TRICHLOROETHYLENE (TCE)	1.6E+01	89
7/1/2005	TRICHLOROETHYLENE (TCE)	1.2E+01	72
7/1/2006	TRICHLOROETHYLENE (TCE)	1.3E+01	76
7/1/2007	TRICHLOROETHYLENE (TCE)	1.9E+01	72
7/1/2008	TRICHLOROETHYLENE (TCE)	1.0E+01	83
7/1/2009	TRICHLOROETHYLENE (TCE)	8.5E+00	83
7/1/2010	TRICHLOROETHYLENE (TCE)	8.3E+00	62

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); ND = Non-detect. Moments are not calculated for sample events with less than 6 wells.

# MAROS First Moment Analysis

**Project:** Boomsnub/Airco Superfund Site

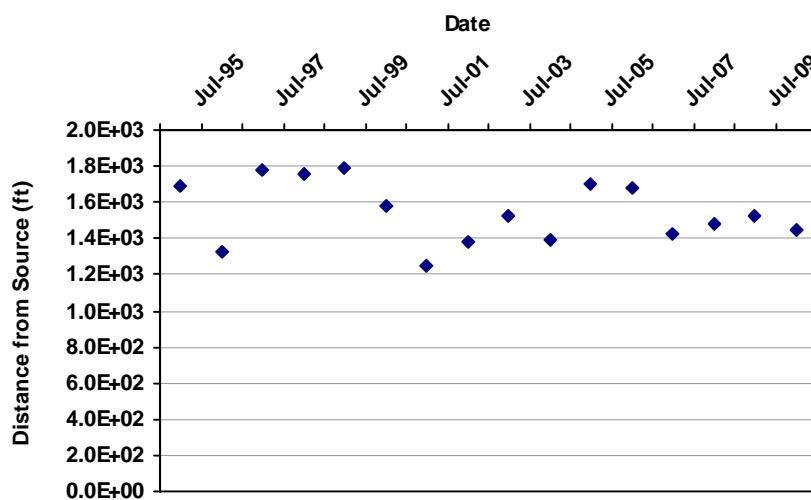
**User Name:**

**Location:** Hazel Dell

**State:** Washington

**COC:** TRICHLOROETHYLENE (TCE)

## Distance from Source to Center of Mass



**Mann Kendall S Statistic:**

-20

**Confidence in Trend:**

80.1%

**Coefficient of Variation:**

0.11

**First Moment Trend:**

S

## Data Table:

Effective Date	Constituent	Xc (ft)	Yc (ft)	Distance from Source (ft)	Number of Wells
7/1/1995	TRICHLOROETHYLENE (TCE)	1,096,295	133,317	1,690	62
7/1/1996	TRICHLOROETHYLENE (TCE)	1,096,645	133,225	1,329	39
7/1/1997	TRICHLOROETHYLENE (TCE)	1,096,203	133,328	1,782	67
7/1/1998	TRICHLOROETHYLENE (TCE)	1,096,223	133,306	1,756	60
7/1/1999	TRICHLOROETHYLENE (TCE)	1,096,183	133,281	1,787	58
7/1/2000	TRICHLOROETHYLENE (TCE)	1,096,389	133,254	1,582	51
7/1/2001	TRICHLOROETHYLENE (TCE)	1,096,709	133,154	1,246	57
7/1/2002	TRICHLOROETHYLENE (TCE)	1,096,582	133,191	1,379	63
7/1/2003	TRICHLOROETHYLENE (TCE)	1,096,434	133,220	1,529	76
7/1/2004	TRICHLOROETHYLENE (TCE)	1,096,573	133,198	1,389	89
7/1/2005	TRICHLOROETHYLENE (TCE)	1,096,265	133,251	1,699	72
7/1/2006	TRICHLOROETHYLENE (TCE)	1,096,300	133,292	1,678	76
7/1/2007	TRICHLOROETHYLENE (TCE)	1,096,552	133,260	1,429	72
7/1/2008	TRICHLOROETHYLENE (TCE)	1,096,498	133,253	1,478	83
7/1/2009	TRICHLOROETHYLENE (TCE)	1,096,445	133,248	1,527	83
7/1/2010	TRICHLOROETHYLENE (TCE)	1,096,535	133,255	1,443	62

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events). Moments are not calculated for sample events with less than 6 wells.

# MAROS First Moment Analysis

**Project:** Boomsnub/Airco Superfund Site

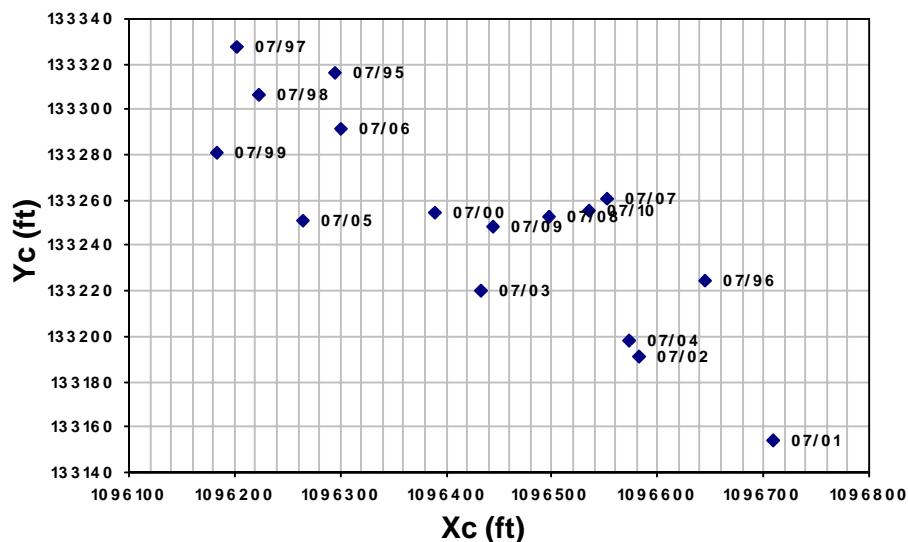
**User Name:**

**Location:** Hazel Dell

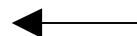
**State:** Washington

**COC:** TRICHLOROETHYLENE (TCE)

## Change in Location of Center of Mass Over Time



**Groundwater Flow Direction:**



**Source Coordinate:**

X:

Y:

Effective Date	Constituent	Xc (ft)	Yc (ft)	Distance from Source (ft)	Number of Wells
7/1/1995	TRICHLOROETHYLENE (TCE)	1,096,295	133,317	1,690	62
7/1/1996	TRICHLOROETHYLENE (TCE)	1,096,645	133,225	1,329	39
7/1/1997	TRICHLOROETHYLENE (TCE)	1,096,203	133,328	1,782	67
7/1/1998	TRICHLOROETHYLENE (TCE)	1,096,223	133,306	1,756	60
7/1/1999	TRICHLOROETHYLENE (TCE)	1,096,183	133,281	1,787	58
7/1/2000	TRICHLOROETHYLENE (TCE)	1,096,389	133,254	1,582	51
7/1/2001	TRICHLOROETHYLENE (TCE)	1,096,709	133,154	1,246	57
7/1/2002	TRICHLOROETHYLENE (TCE)	1,096,582	133,191	1,379	63
7/1/2003	TRICHLOROETHYLENE (TCE)	1,096,434	133,220	1,529	76
7/1/2004	TRICHLOROETHYLENE (TCE)	1,096,573	133,198	1,389	89
7/1/2005	TRICHLOROETHYLENE (TCE)	1,096,265	133,251	1,699	72
7/1/2006	TRICHLOROETHYLENE (TCE)	1,096,300	133,292	1,678	76
7/1/2007	TRICHLOROETHYLENE (TCE)	1,096,552	133,260	1,429	72
7/1/2008	TRICHLOROETHYLENE (TCE)	1,096,498	133,253	1,478	83
7/1/2009	TRICHLOROETHYLENE (TCE)	1,096,445	133,248	1,527	83
7/1/2010	TRICHLOROETHYLENE (TCE)	1,096,535	133,255	1,443	62

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events). Moments are not calculated for sample events with less than 6 wells.

# MAROS Second Moment Analysis

**Project:** Boomsnub/Airco Superfund Site

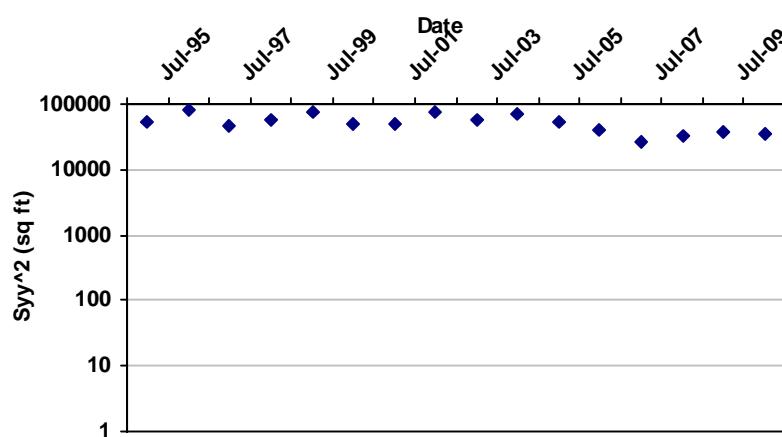
**User Name:**

**Location:** Hazel Dell

**State:** Washington

**COC:** TRICHLOROETHYLENE (TCE)

## Change in Plume Spread Over Time



**Mann Kendall S Statistic:**

-54

**Confidence in Trend:**

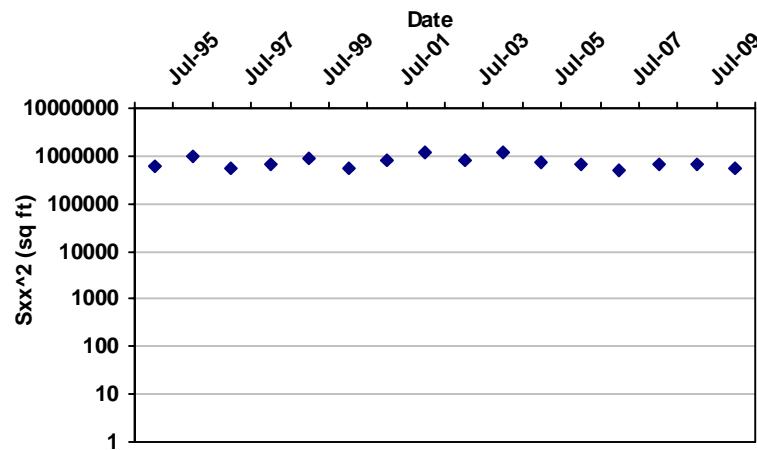
99.2%

**Coefficient of Variation:**

0.31

**Second Moment Trend:**

D



**Mann Kendall S Statistic:**

-18

**Confidence in Trend:**

77.5%

**Coefficient of Variation:**

0.28

**Second Moment Trend:**

S

## Data Table:

Effective Date	Constituent	Sigma XX (sq ft)	Sigma YY (sq ft)	Number of Wells
7/1/1995	TRICHLOROETHYLENE (TCE)	626,713	52,351	62
7/1/1996	TRICHLOROETHYLENE (TCE)	1,032,234	81,672	39
7/1/1997	TRICHLOROETHYLENE (TCE)	537,192	45,231	67
7/1/1998	TRICHLOROETHYLENE (TCE)	688,700	57,562	60
7/1/1999	TRICHLOROETHYLENE (TCE)	929,624	72,915	58
7/1/2000	TRICHLOROETHYLENE (TCE)	566,749	49,693	51
7/1/2001	TRICHLOROETHYLENE (TCE)	782,493	47,909	57
7/1/2002	TRICHLOROETHYLENE (TCE)	1,171,568	73,027	63
7/1/2003	TRICHLOROETHYLENE (TCE)	852,959	55,253	76
7/1/2004	TRICHLOROETHYLENE (TCE)	1,181,468	68,917	89
7/1/2005	TRICHLOROETHYLENE (TCE)	736,614	53,562	72
7/1/2006	TRICHLOROETHYLENE (TCE)	696,859	41,571	76

# MAROS Second Moment Analysis

Effective Date	Constituent	Sigma XX (sq ft)	Sigma YY (sq ft)	Number of Wells
7/1/2007	TRICHLOROETHYLENE (TCE)	506,298	25,837	72
7/1/2008	TRICHLOROETHYLENE (TCE)	660,701	33,304	83
7/1/2009	TRICHLOROETHYLENE (TCE)	645,632	36,716	83
7/1/2010	TRICHLOROETHYLENE (TCE)	577,463	35,157	62

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events)

The Sigma XX and Sigma YY components are estimated using the given field coordinate system and then rotated to align with the estimated groundwater flow direction. Moments are not calculated for sample events with less than 6 wells.

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# MAROS Plume Analysis Summary

**Project:** Boomsnub/Airco Superfund Site

**Location:** Hazel Dell

**User Name:**

**State:** Washington

**Time Period:** 1/19/1995 **to** 10/20/2010

**Consolidation Period:** Yearly

**Consolidation Type:** Geometric Mean

**Duplicate Consolidation:** Maximum

**ND Values:** 1/2 Detection Limit

**J Flag Values :** Actual Value

Constituent	Well	Source/ Tail	Number of Samples	Number of Dectects	Average (mg/L)	Median (mg/L)	All Samples "ND" ?	Mann- Kendall	Linear Regression	Modeling	Empirical
<b>TRICHLOROETHYLENE (TCE)</b>											
AMW-52C	S	S	7	0	2.5E-04	2.5E-04	Yes	S	D	N/A	N/A
RAMW-2C	S	S	9	5	3.3E-04	2.5E-04	No	NT	PD	N/A	N/A
MW-1A	S	S	16	16	1.3E+00	1.1E+00	No	D	D	N/A	N/A
MW-1B	S	S	12	9	1.4E-03	2.5E-04	No	NT	D	N/A	N/A
MW-1C	S	S	11	3	1.1E-03	2.5E-04	No	NT	NT	N/A	N/A
AMW-55C	S	S	7	2	2.7E-04	2.5E-04	No	S	NT	N/A	N/A
AMW-55A	S	S	7	7	9.7E-03	9.5E-04	No	NT	D	N/A	N/A
AMW-54C	S	S	7	2	2.7E-04	2.5E-04	No	NT	PI	N/A	N/A
AMW-54A	S	S	8	8	4.4E-02	2.2E-03	No	PD	D	N/A	N/A
AMW-53C	S	S	7	1	2.4E-04	2.5E-04	No	S	PD	N/A	N/A
AMW-53A	S	S	8	8	4.7E-02	1.2E-02	No	PD	D	N/A	N/A
AMW-52A	S	S	8	7	4.0E-04	2.6E-04	No	D	D	N/A	N/A
AMW-4A	S	S	7	3	2.8E-04	2.5E-04	No	D	D	N/A	N/A
AMW-3A	S	S	16	16	6.5E-03	6.4E-03	No	D	D	N/A	N/A
AMW-2B	S	S	12	11	1.4E-03	5.1E-04	No	NT	D	N/A	N/A
AMW-1A	S	S	16	16	1.6E-01	8.2E-02	No	D	D	N/A	N/A
AMW-53B	S	S	7	7	1.2E-03	1.0E-03	No	D	D	N/A	N/A
AMW-13A	S	S	16	14	4.4E-03	8.0E-04	No	NT	NT	N/A	N/A
AMW-2A	S	S	16	16	1.3E+00	7.1E-01	No	D	D	N/A	N/A
AMW-12A	S	S	16	16	1.6E+00	8.1E-01	No	D	D	N/A	N/A
AMW-19A	S	S	14	14	8.9E-02	7.3E-02	No	D	D	N/A	N/A
AMW-19B	S	S	8	7	4.0E-04	2.9E-04	No	NT	NT	N/A	N/A

**Project:** Boomsnub/Airco Superfund Site

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**State:** Washington

Constituent	Well	Source/Tail	Number of Samples	Number of Detects	Average (mg/L)	Median (mg/L)	All Samples "ND" ?	Mann-Kendall	Linear Regression Modeling	Empirical
TRICHLOROETHYLENE (TCE)										
AMW-1B		S	12	11	3.8E-03	4.8E-04	No	D	D	N/A
AMW-1C		S	10	1	1.7E-03	2.5E-04	No	NT	PD	N/A
AMW-26		S	14	12	1.8E-02	2.4E-03	No	D	D	N/A
AMW-8A		T	15	15	9.3E-02	5.5E-02	No	D	D	N/A
AMW-56A		T	8	8	8.8E-02	2.0E-03	No	D	D	N/A
CPU-12		T	15	15	4.6E-03	4.0E-03	No	NT	NT	N/A
AMW-61		T	4	4	1.9E-02	1.4E-02	No	S	PD	N/A
CPU-13		T	16	16	2.1E-02	5.4E-03	No	D	D	N/A
AMW-6A		T	8	5	4.7E-04	4.8E-04	No	NT	NT	N/A
AMW-63		T	4	2	2.1E-04	2.4E-04	No	NT	S	N/A
CPU-14		T	16	16	2.7E-02	2.5E-02	No	D	D	N/A
AMW-11A		T	8	6	4.9E-04	4.8E-04	No	NT	I	N/A
MW-10B		T	16	16	1.2E-01	5.2E-02	No	D	PD	N/A
AMW-14		T	12	11	2.6E-02	4.4E-03	No	D	D	N/A
AMW-7A		T	13	6	3.4E-04	2.5E-04	No	I	NT	N/A
AMW-60		T	2	1	5.4E-04	5.4E-04	No	N/A	N/A	N/A
AMW-59		T	6	6	1.4E-01	1.3E-01	No	S	PD	N/A
AMW-56C		T	7	4	2.7E-04	2.5E-04	No	I	I	N/A
AMW-16		T	14	14	2.2E-02	7.1E-03	No	D	D	N/A
AMW-17		T	15	15	8.6E-03	2.3E-03	No	D	D	N/A
AMW-18		T	14	13	8.9E-02	1.0E-03	No	I	I	N/A
MW-10C		T	16	16	2.0E-01	9.6E-02	No	D	D	N/A
MW-14C		T	16	16	2.7E-01	6.4E-02	No	D	D	N/A
AMW-45		T	10	0	1.8E-04	2.5E-04	Yes	PI	I	N/A
AMW-44		T	10	0	1.8E-04	2.5E-04	Yes	PI	I	N/A
AMW-43		T	11	0	2.1E-04	2.5E-04	Yes	NT	I	N/A
AMW-42		T	12	12	4.6E-03	1.3E-03	No	D	D	N/A
AMW-27		T	13	13	4.9E-02	5.0E-02	No	D	D	N/A
AMW-58		T	4	4	1.8E-03	1.3E-03	No	D	D	N/A
MW-6A		T	3	1	2.7E-03	2.5E-04	No	N/A	N/A	N/A
MW-3C		T	6	6	8.8E-03	9.4E-03	No	D	D	N/A
MW-40		T	6	6	9.5E-03	4.4E-03	No	D	D	N/A
MW-41		T	12	3	3.7E-04	2.5E-04	No	NT	I	N/A
MW-46		T	11	0	2.1E-04	2.5E-04	Yes	NT	I	N/A

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Constituent	Well	Source/Tail	Number of Samples	Number of Detects	Average (mg/L)	Median (mg/L)	All Samples "ND" ?	Mann-Kendall	Linear Regression Modeling	Empirical
TRICHLOROETHYLENE (TCE)										
MW-47	T	10	0	1.8E-04	2.5E-04	Yes	PI	I	N/A	N/A
MW-48	T	11	0	1.9E-04	2.5E-04	Yes	PI	I	N/A	N/A
MW-49	T	10	10	9.3E-03	7.9E-03	No	D	S	N/A	N/A
MW-4A	T	10	10	1.7E-02	4.8E-03	No	NT	NT	N/A	N/A
MW-4B	T	8	8	7.0E-02	7.7E-03	No	NT	NT	N/A	N/A
MW-12C	T	16	16	8.4E-01	5.2E-02	No	D	D	N/A	N/A
MW-4C	T	5	5	2.4E-02	3.2E-02	No	S	D	N/A	N/A
MW-37	T	11	0	2.1E-04	2.5E-04	Yes	NT	NT	N/A	N/A
MW-6B	T	16	16	1.9E-01	1.4E-01	No	D	D	N/A	N/A
MW-6C	T	8	8	3.2E-02	3.4E-02	No	PD	D	N/A	N/A
MW-6D	T	6	6	1.9E-02	2.1E-02	No	D	D	N/A	N/A
MW-7B	T	5	5	1.6E-01	1.1E-01	No	D	D	N/A	N/A
MW-7C	T	5	5	4.4E-03	8.5E-04	No	D	D	N/A	N/A
MW-8B	T	8	8	5.5E-01	3.5E-02	No	D	D	N/A	N/A
MW-9B	T	9	9	3.8E-01	6.0E-02	No	D	D	N/A	N/A
MW-9C	T	6	6	3.9E-01	7.8E-02	No	D	D	N/A	N/A
PW-1B	T	16	16	1.7E-01	9.1E-02	No	D	D	N/A	N/A
MW-4BSHED	T	8	8	4.1E-02	1.2E-02	No	D	D	N/A	N/A
MW-23D	T	16	16	1.8E-02	1.0E-02	No	D	D	N/A	N/A
MW-13C	T	16	16	9.0E-03	6.8E-03	No	D	D	N/A	N/A
MW-14E	T	16	16	1.0E+00	2.9E-01	No	D	D	N/A	N/A
MW-15E	T	11	11	1.6E-01	2.1E-02	No	D	D	N/A	N/A
MW-16E	T	11	10	2.5E-03	2.8E-03	No	PI	I	N/A	N/A
MW-17E	T	4	3	4.3E-04	3.2E-04	No	S	S	N/A	N/A
MW-18D	T	16	16	9.9E-01	3.1E-01	No	D	D	N/A	N/A
MW-18E	T	15	15	6.9E-01	3.6E-01	No	D	D	N/A	N/A
MW-19D	T	16	16	4.3E-01	1.3E-01	No	D	D	N/A	N/A
MW-20D	T	16	16	9.3E-01	2.5E-01	No	D	D	N/A	N/A
MW-3B	T	9	9	1.0E-02	9.2E-03	No	D	D	N/A	N/A
MW-22D	T	16	16	8.3E-02	6.2E-02	No	D	D	N/A	N/A
MW-3A	T	11	10	8.3E-04	7.7E-04	No	S	S	N/A	N/A
MW-25D	T	16	16	1.7E-02	6.7E-03	No	D	D	N/A	N/A
MW-26D	T	16	16	1.1E-02	3.3E-03	No	D	D	N/A	N/A
MW-27D	T	16	16	4.9E-02	5.1E-03	No	D	D	N/A	N/A

**Project:** Boomsnub/Airco Superfund Site

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**State:** Washington

Constituent	Well	Source/Tail	Number of Samples	Number of Detects	Average (mg/L)	Median (mg/L)	All Samples "ND" ?	Mann-Kendall	Linear Regression Modeling	Empirical
TRICHLOROETHYLENE (TCE)										
MW-2A		T	13	13	6.7E-03	5.9E-03	No	D	D	N/A
MW-2B		T	10	10	1.3E-02	1.0E-02	No	D	D	N/A
MW-2C		T	7	7	6.1E-03	3.3E-03	No	D	D	N/A
MW-30		T	9	0	2.9E-04	2.5E-04	Yes	D	D	N/A
MW-31		T	13	13	2.9E-03	5.7E-04	No	D	D	N/A
MW-35		T	12	12	1.3E-02	5.9E-03	No	NT	PD	N/A
AMW-10A		T	7	5	3.5E-04	3.7E-04	No	S	S	N/A
MW-21D		T	16	16	3.1E-01	6.1E-02	No	D	D	N/A

Note: Increasing (I); Probably Increasing (PI); Stable (S); Probably Decreasing (PD); Decreasing (D); No Trend (NT); Not Applicable (N/A) - Due to insufficient Data (< 4 sampling events); Source/Tail (S/T)

The Number of Samples and Number of Detects shown above are post-consolidation values.